PRINCIPAL INSTRUCTIONAL LEADERSHIP, WORKING CONDITIONS, AND PRINCIPAL TURNOVER IN K-12 PUBLIC SCHOOLS

by

Rui Yan

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STATEMENT OF DISSERTATION APPROVAL

The dissertation of **Rui Yan**

has been approved by the following supervisory committee members:

Yongmei Ni	, Chair	**July, 28, 2016** Date Approved
Andrea K. Rorrer	, Member	**July, 28, 2016** Date Approved
Irene H. Yoon	, Member	**July, 28, 2016** Date Approved
Diana Gail Pounder	, Member	Date Approved
Shari Lynn Fraser	, Member	Date Approved

and by **Gerardo R. Lopez**, Chair/Dean of

the Department of **Educational Leadership and Policy**

and by David B. Kieda, Dean of The Graduate School.

ABSTRACT

Ever-increasing pressures from federal and state accountability policies and the aging and retirement of the baby boom generation have been accelerating principal turnover in K-12 schools during the past decade. This phenomenon has raised nationwide concern about school stability and student performance. Therefore, it is necessary to examine the factors that influence principal turnover in order to support and retain principals for school stability and success.

Based on data from the 2011-2012 Schools and Staffing Survey (SASS) and the 2012-2013 Principal Follow-up Survey (PFS) sponsored by National Center for Education Statistics (NCES), this study comprehensively examines what factors influence the probability of different types of principal turnover. These turnover categories include moving to another school, leaving the school system/changing roles to become a teacher, getting promoted to the district central office, and retiring. With the guidance of a conceptual framework from Microeconomic Labor Market Theory, this study categorizes factors from both the supply side (principal) and demand side (school and school district) in the principal labor market. With multinomial logistic regressions with region fixed effects, this study examines to what extent the supply side—principal characteristics and principal instructional leadership practices, and the demand side—school context and working conditions can predict the probability of different types of principal turnover.

In terms of principal characteristics, this study found that principals who attended aspiring principal programs or had a license/certificate in school administration were less likely to change roles or leave the education system. In terms of school contextual factors, principals in secondary schools, in larger school districts, in schools that did not make Adequate Yearly Progress (AYP), and/or in schools with a higher proportion of students of color were more likely to move to another school.

This study also fills a research gap by focusing on the influence of both principal instructional leadership practices and working conditions on principal turnover. Principals who were highly focused on enhancing student academic performance and academic incentive programs were less likely to move to another school. Principals who spent higher proportions of time on curriculum and teaching related tasks or internal administrative tasks were more likely to move or leave. Additionally, higher salaries, beneficial job contracts, tenure systems, professional development, fewer student disciplinary problems, and more influence on evaluating teachers were all associated with lower odds of principal turnover.

These findings could assist policy makers in understanding different types of principal turnover and what factors could influence various turnover behaviors. This understanding could allow policy makers to provide adequate resources and to create positive working environments in order to develop, support, and retain strong instructional leaders for school success.

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CHAPTER 1

INTRODUCTION

Principal leadership is believed to be the second most influential school-based factor to influence student performance after classroom instruction, accounting for one quarter of all school effects on student achievement (Leithwood, Louis, Anderson, & Wahlstrom, 2004; Marzano, Waters, & McNulty, 2005; Robinson, Lloyd, & Rowe, 2008). Numerous studies have found that strong principal leadership has an indirect but positive impact on student performance through multiple avenues. These avenues include setting school goals (Brewer, 1993; Hallinger, 2005; Hallinger & Heck, 1985); establishing and supporting instruction and curricular development (Leithwood et al., 2004; Murphy & Hallinger, 1988); recruiting, developing, and retaining high-quality teachers (Branch et al., 2012; Brewer, 1993; Darling-Hammond et al., 2005; Firestone et.al, 2005; Leithwood, Harris, & Hopkins, 2008); and establishing school policies and nurturing a positive learning culture through which teachers exert a more direct impact on students (Branch et al., 2012; Copland, 2003; Heck, 1992; Leithwood et al., 2004; Robinson et al., 2008). Effective leadership has a greater impact in schools with a high concentration of low-income, low-performing students, and students of color (Leithwood et al., 2004). Given the importance of principal leadership on school success, leadership stability is also a critical component of well-run schools (Béteille, Kalogrides, & Loeb,

2012).

Although principal turnover is inevitable in all schools, a majority of studies found that frequent principal turnover oftentimes has a negative impact on school performance (e.g., Béteille et al., 2012; Leithwood et al., 2004; Mascall & Leithwood, 2010; Ni, Sun, & Rorrer, 2015). For instance, frequent changes in school leadership are likely to cause a loss of school institutional memory, create inconsistencies in school goals, policy, and culture, and disrupt school management (Mascall & Leithwood, 2010; Ni et al., 2015). Moreover, excessive principal turnover is likely to undermine improvement efforts and principal leadership capacity, as well as decrease student performance, lower teacher morale, and increase teacher turnover (Béteille et al., 2012; Leithwood et al., 2004). This negative impact of high principal turnover is particularly detrimental to high-poverty and/or low-performing schools, which struggle to attract and retain experienced and effective principals (Béteille et al., 2012; Branch, Hanushek, & Rivkin, 2008).

A few researchers also found that principal turnover could have positive effects on school performance under certain conditions. For instance, it could be beneficial for a school if an ineffective principal leaves and a more qualified principal takes over (DeAngelis & White, 2011; Gates, Ringel, Santibañez, Guarino, Ghosh-Dastidar, & Brown, 2006). Additionally, a certain amount of principal turnover could be beneficial to schools if it results in an improvement in principal-school matches, an infusion of innovative policies into schools, or a dismissal of ineffective employees from the school (Abelson & Baysinger, 1984; Baker, Punswick, & Belt, 2010; Fullan, 1993). To take this a step further, since principals of different leadership capacities and instructional

leadership practices could have different levels of influence on school performance, the turnover of different principals could also exert varied influence on school performance. By identifying the strength of the relationships between specific principal leadership behaviors and principal turnover, educational leaders and policy makers could gain a more accurate understanding of the leadership behaviors that are associated with different transitions of principals, thus providing adequate support and positive environment to retain more effective principals for school success.

During the past decade, the principal turnover rates in school districts across the United States ranged from 15% to 30% each year (Fink & Brayman, 2006). More recently, according to the National Center for Education Statistics (NCES), about 23% of principals during the 2011-2012 school year left in the following school year nationally—about 7% moving to a different school, 7% leaving the principalship to pursue another career or position, and 4% retiring from their jobs. Principal turnover is especially high (about 25%) in schools with large concentrations of low-income, low-performing students, and students of color (Béteille et al., 2012; Branch et al., 2008; DeAngelis & White, 2011; Gates et al., 2006).

Aging and retirement of the baby boom generation and ever-increasing pressures from federal and state accountability policies have accelerated principal turnover (Fink & Brayman, 2006). The shortage and high turnover of principals in the United States public and nonpublic schools has raised nationwide concern about school stability and student performance (Fraser & Brock, 2006). In 2010, the United States Department of Education launched a blueprint for reform to improve school effectiveness and student performance. This includes the reauthorization of elementary and secondary education and a set of

guidelines that stresses the importance of supporting and funding principal leadership by recruiting, retaining, and rewarding principals (the United States Department of Education, 2010). This policy initiative emphasizes the importance of principal retention and stability and has gained much attention from scholars and practitioners who explore solutions to these problems.

In conclusion, given both the increasing attention on principal turnover and the mixed effects of principal turnover on school performance, it is critical for researchers to examine what factors are associated with different types of principal turnover. This dissertation comprehensively examines how different factors (i.e., principal characteristics, principal instructional leadership practices, school context, and working conditions) influence the probability of different types of principal turnover. This study could assist policy makers in creating the educational policies and working conditions that support and retain quality principals.

1.1 Statement of the Problem

Despite the increasing importance of principal turnover issues, research on the factors that influence principal turnover is sparse and it primarily focuses on principal characteristics and school contextual factors. For instance, some research has found that principals of color are more likely to leave their positions as compared with white principals (Akiba & Reichardt, 2004; Baker et al., 2010; Gates et al., 2006). Additionally, schools with larger proportions of low-income, low-performing students, students of color, or less-qualified teachers are all associated with a higher possibility of principal turnover (Akiba & Reichardt, 2004; Baker et al., 2010; Gates at al., 2006; Loeb et al.,

2010; Papa Jr., 2007; Parlow, 2007). These studies differ in their definitions of principal turnover and in the scope of factors that they examine (Farley-Ripple, Solano, & McDuffie, 2012b); therefore, the heterogeneity across these studies presents some challenges when drawing connections and projecting trends in this field.

Beyond principal characteristics and school contextual factors, how principal leadership practices are associated with principal turnover rarely has been examined. Principal practices have evolved over time in response to policy environments. During the past two decades, under the influence of the No Child Left Behind Act (NCLB), the Race to the Top Act, as well as state accountability policies, the capability to enhance student performance has become one of the most important priorities for principals (Leithwood et al., 2004; Loeb et al., 2010). Principal leadership practices that are highly focused on instruction (Hallinger & Murphy, 1985), defined as "instructional leadership," are a critical component in school effectiveness. These instructional leadership practices can exert a strong influence on student performance through setting school goals, supervising and evaluating instruction, and promoting school culture (Blair, 2002; Hallinger & Murphy, 1985; Hallinger, 2005; Hallinger, Wang, & Chen, 2013). Given the strong influence of instructional leadership practices on school success, it is imperative to examine how varied instructional leadership practices are associated with different types of principal turnover and what kind of leaders leave.

Moreover, working conditions are primary concerns for many principals, but little research has focused on the influence of working conditions on principal turnover (Pijanowski, Hewitt & Brady, 2009). Nowadays, since state and federal accountability systems are placing increasing pressures on principals to improve student performance,

principals assume expanding roles, new challenges, and growing workloads from multiple stakeholders (Loeb et al, 2010; Pijanowski et al., 2009). Therefore, workload, compensation, supports from multiple stakeholders (districts, school boards, parents and teachers), available advancement and professional development opportunities, as well as autonomy to make school decisions are all important factors that could affect principal turnover (Fuller, Hollingworth, & Young, 2015; Pijanowski et al., 2009; Tekleselassie & Villarreal, 2011). Due to the broad range of working conditions and the lack of appropriate measurements of these factors, studies about the influence of working conditions on principal turnover are rare.

Finally, most studies have combined multiple types of principal turnover (e.g., principals' leaving the education system, moving to another school, changing roles to become a teacher, getting promoted to the district central office, etc.) into one category despite the complexity of different turnover types. Since principals who transfer to another school and those who leave the education system could have different characteristics and reasons that drive their turnover decisions, combining all principal turnover into one category could limit the accuracy and implication of research outcomes.

1.2 Purpose of Study and Research Questions

To address the above research gaps, this dissertation utilizes the Schools and Staffing Survey (SASS) from 2011-2012 and the Principal Follow-up Survey (PFS) from 2012-2013, to comprehensively examine how principal characteristics, principal instructional leadership practices, school context, and principal working conditions are associated with different types of principal turnover. This study categorizes the principal

statuses in the PFS into the following categories: remaining principals at current schools (stayer), transferring to another school but remaining principals (mover), changing roles in school or leaving the education system (leaver), getting promoted to the district central office (promoted), and retiring (retired). Given the less predictable feature of the PFS principal statuses of "on leave (e.g., maternity/paternity, military, disability, sabbatical), deceased, and other statuses that were unable to obtain," they are excluded from this study.

The purpose of this study is to answer the following research questions:

1) How do principal characteristics and school context influence the probability of different types of principal turnover (mover, leaver, promoted, or retired) as compared with the probability of stayers?
2) How are principal instructional leadership practices associated with different types of principal turnover, while controlling for principal characteristics and school context?
3) How do principal working conditions influence different types of principal turnover, while controlling for principal characteristics and school context?

To answer these research questions, this study applies multinomial logit regressions with region fixed effects to estimate the impact of each set of variables on the likelihood of different types of principal turnover compared with principals who stayed in their current positions in the following year.

The structure of this dissertation is elaborated as follows. Chapter 1 introduces the background of principal turnover issues, the purpose of the study, and research questions. Chapter 2 first conceptualizes a framework that applies Microeconomic Labor Market

Theory to the principal labor market, which consists of the supply side (principals), demand side (schools and school districts), and policy environment (the federal government, states, and school districts). The second section of Chapter 2 reviews existing literature on how different factors influence principal turnover. These factors include principal characteristics, principal instructional leadership practices, school context, and working conditions. Chapter 3 introduces the methodology of this study, including data sources (sampling and scope of data), variable measurements, and analytical strategies. Chapter 4 includes descriptive analyses, mean comparisons, and multinomial logistic regressions with region fixed effects that examine to what extent different types of principal turnover can be explained by the four dimensions of independent variables. Chapter 5 discusses the findings and explore the contributions, limitations, and further directions, as well as the policy implications of this study.

CHAPTER 2

CONCEPTUAL FRAMEWORK AND LITERATURE REVIEW

This first section of Chapter 2 introduces the conceptual framework of this study (Microeconomic Labor Market Theory), and analyzes the supply side (principal), the demand side (school and school district), and the policy environment (federal, state, and school district) of the principal labor market. With the guidance of this conceptual framework, the second section of Chapter 2 reviews existing literature on the labor market factors that influence principal turnover. These factors include principal characteristics and principal instructional leadership practices (supply side), and school context and working conditions (demand side). In particular, these supply and demand factors are contextualized in a specific policy environment.

2.1 Conceptual Framework

This study is conceptualized with Microeconomic Labor Market Theory, which analyzes labor supply and demand at the level of the individual firm and worker (e.g., Borjas, 2005; Frank, 2014). The labor market is comprised of three major actors: workers, firms, and the government. From the supply side of the labor market, workers determine whether to work, which occupations to enter, when to transition or quit a job, which skills to acquire, and whether to join a labor union. Workers, as rational decision

makers, make their career decisions (including entry, mobility, and exit of a certain career or position) to maximize their well-being and benefits. From the demand side of the labor market, firms determine the types and numbers of workers that they want to hire, working hours, and working conditions. Firms expect to maximize profits by making production and personnel decisions, including hiring cheaper and more productive workers. The final major actor in the labor market is the government, which can affect the choices of both the supply and demand sides through policymaking. The government can impose taxes on workers' earnings, subsidize the professional training of workers, and increase/decrease worker supply by policy implementation (e.g., immigration policies); meanwhile, the government can also impose a payroll tax on firms and establish standards to regulate or restrict certain market transactions (e.g., determine minimal pay). Despite the conflict of interests amongst firms, workers, and policy makers, the labor market as a whole is able to establish wage and employment equilibrium by balancing the choices and needs of the supply and demand sides (Borjas, 2005).

Given the nonprofit nature of the American public school system, public schools do not intend to pursue profits like firms that produce goods and services. But schools and school districts still have incentives to improve school management and enhance student performance due to the pressure from federal and state accountability policies as well as desires to receive continuous funding for school development (Ornstein, Levine, Gutek, & Vocke, 2016). Moreover, in business, the demand side of the labor market (stakeholders in the firm) usually determine the hiring and replacing of the CEO. However, for the principal labor market, schools that require principals to lead and manage day-to-day school operations to maintain the functioning of school systems do

not usually have the power to recruit and replace principals. Instead, school districts determine the recruiting, rotating, and dismissal of principals, and they also support and develop principals for school success (Ornstein et al., 2016).

Based on the Microeconomic Labor Market Theory and the unique nature of the K-12 education system, the principal labor market is comprised of three major factors: principals, schools and school districts, and federal and state governments. Principals are the supply side of the principal labor market. They have their own preferences and benefits regarding their entry into, their mobility in, and their exit from the principalship. They also determine their practices in school leadership and management. The demand side of the principal labor market is comprised of both schools and school districts. Schools need principals to lead, manage, and maintain the functioning of the school system. School districts, as the demand side and as state policy extensions, have the power to create school-level policies to develop and support principals and teachers (Ornstein et al., 2016).

Other than school districts, the federal and state governments, as policy makers, influence the demand and supply of the principal labor market in various ways. These avenues include establishing and enacting statutes to raise student academic performance, overseeing policy implementation, administering grant funds, determining school taxes and financial aid to local school districts, engaging in educational innovation and research, and setting minimum standards for training and recruiting personnel, as well as providing curriculum guidelines and assessment requirements (Ornstein et al., 2016). The supply and demand sides of the principal labor market interact with one another and are also influenced by multiple levels of educational policies, which together determine the

equilibrium of the principal labor market. The following paragraphs elaborate on the supply side, demand side, and policy environment of the principal labor market.

2.1.1 Supply Side

As the supply side of the principal labor market, principals and principal candidates can determine their entry into, mobility in, and exit from the principalship. In order to fulfill their preferences and maximize their well-being, principals determine where they want to work, how many hours they are willing to work, what certificates they want to acquire, and what working conditions they desire, as well as what leadership and management practices they want to provide. Job Choice Theory, first introduced to the eductional field by Young, Rinehart, and Place (1989), provides two perspectives—objective and subjective—to help understand the career choices made by principals and principal candidates. Different factors such as salary, job benefits, professional development opportunities, and autonomy in decision making are weighed based on their relative importance to each individual as they make their career decisions (Behling et al., 1968).

From the objective perspective of Job Choice Theory, principals are "economic beings" who seek to maximize their economic status by joining the organization that is most economically competitive for them (Young, Rinehart, & Place, 1989). Economic benefits such as salary/benefit packages, prospects for job advancement, and educational opportunities are all important factors in principal career choices (Pounder & Merrill, 2001). Empirically, researchers have found that principals' salaries and other job benefits such as stipends and retirement benefits, are important factors in both drawing teachers

into leadership and in retaining principals (Akiba & Reichardt, 2004; Fraser & Brock, 2006; Pounder & Merrill, 2001). For example, Fraser and Brock (2006) conducted a qualitative study on principal retention among Catholic school principals in New South Wales and Australia and found that financial security is a critical factor for principal retention.

From the subjective perspective of Job Choice Theory, principals are "psychological beings" who choose jobs to meet their psychological needs and emotional expectations (Young, Rinehart, & Place, 1989). Principals seek principalships in specific district, school, and community environments that are more satisfying and compatible with their own psychological needs (Behling et al, 1968; Pounder & Merrill, 2001; Tom, 1971). For instance, if a principal prefers to work in a democratic-leadership rather than a bureaucratic-leadership environment, then he is more likely to work in a district or school with this kind of organizational climate (Pounder & Young, 1996). As another example, principals often need adequate autonomy and time to work with their school communities to achieve meaningful school improvement goals and to cultivate a positive school culture (Fink & Brayman, 2006). A lack of authority on school decision making could undermine principal job satisfaction, which could cause a principal to transfer to another school/district or even leave the education system (Vroom, 1964).

It is worth noting that, as an independent human being, a principal's individual preferences rather than school district assignments often play a more important role in his principal turnover decisions (Loeb et al., 2010). Although, in cases such as emergencies or reassignments within region or district offices, a principal could be directly appointed to a position without a formal selection process, more often, interested principals apply

for and are then chosen for the open positions (Loeb et al., 2010).

In addition to principal preferences, principals' leadership and management practices are another aspect from the supply side of the principal labor market. They comprise a set of leadership practices considered to be "instructional leadership." These practices form the core of what principals are expected to be responsible for, though they may find their actual work is distributed to other concerns. Instructional leadership refers to school leadership that is highly focused on the core technology of schools—teaching and learning (Hallinger, 2005; Hallinger & Murphy, 1985). Instructional leadership has been a key tool used to examine the roles and practices of principals in school effectiveness due to its emphasis on enhancing school performance (Hallinger & Murphy, 1985). Generally, principal instructional leadership practices include three main dimensions: setting school goals, supervising and evaluating instruction, and promoting school culture (Hallinger et al., 2013; Hallinger & Murphy, 1985). Through all these avenues, principals can exert an influence on school performance.

2.1.2 Demand Side

Schools and school districts are both the demand side of the principal labor market. Schools provide contextual conditions for principals to work in and require principals to lead and manage day-to-day school operations to maintain the functioning of the school system (Ornstein et al., 2016). Meanwhile, school districts provide supports in curriculum, instruction, and assessment in order to enhance student performance, determine the recruitment/rotation/dismissal of principals, and deliver professional development to enhance principal capacity for student and teacher learning (Farley-

Ripple, Raffel, & Christine Welch, 2012a; Hopkins, 2003; Ornstein et al., 2016). The following paragraphs further explain how school districts influence the principal labor market.

The district central office and local school board assume the majority of responsibility for ensuring that local schools are properly managed and meet requirements and regulations from the federal and state governments to enhance student achievement (Ornstein et al., 2016). In addition, the Human Resources Department in the school district has the power to determine the roles of principals in school management, their working conditions (e.g., length of working hours, contract type), and the hiring, rotation, and dismissal of principals (Ornstein et al., 2016). Therefore, as the demand side of the principal labor market, districts often have incentives to hire high-quality principals that are able to enhance student performance and to retain quality principals for school success.

Meanwhile, principal quality also influences district decisions on the assignment/reassignment and dismissal of principals. Poor performance from principals can lead to removal or reassignment by the district central office; however, effective management can also encourage school districts to request principals to transfer to a struggling school in need of urgent reform or to provide promotion opportunities to the central office (Farley-Ripple et al., 2012a). Moreover, for the convenience of management, school districts also aim at recruiting and retaining principals whose views on school management are consistent with district goals and values (Kowalski, 2013).

Additionally, to enhance the leadership capacity of principals to facilitate school success, school districts often play a significant role in supporting and developing

principal leadership (Hopkins, 2003). District support in building school leadership capacity includes providing professional development opportunities to principals, managing financial and human resources, setting school vision and culture, offering emergency support for safety issues, and supporting school leadership and management in a variety of other ways (Farley-Ripple et al., 2012a; Marsh, Sloan-McCombs, Jockwood, 2008; Waters & Marzano, 2006).

2.1.3 Policy Environment

Policy environments can influence actors from both the demand and supply sides of the principal labor market. The American education system is mainly organized on three governmental levels—federal governments, states, and local school districts (Ornstein et al., 2016). The federal and state governments share primary responsibility and political power over public education, with the states exercising most of the control. Except for Hawaii, states delegate power to local school boards (often bounded by county, city or township) that exercise control over a school district. With the development of school-based management, the local school board and the district central office can further delegate significant authority to school principals and teachers (Ornstein et al., 2016). Understanding how different levels of governments interact with each other on policy making and how they exert influence and take responsibilities for different aspects of the process can help researchers unpack policy influences on the principal labor market.

The federal government started to exert more influence on local public schools

since 2001, when the No Child Left Behind Act (NCLB)[1] was initiated by President Bush. NCLB emphasized annual testing, academic progress, teacher qualifications, and significant changes in funding, and has influenced the American education system for the past two decades (Klein, 2015). The aim of this Act was to improve low-performing schools and to hold states and local school districts accountable for students meeting high academic standards in reading and math, as measured by annual performance tests developed by each state (NCLB, 2009). Schools that fail to improve student performance and meet Adequate Yearly Progress (AYP) four years in a row will face possible penalties, including a decrease or elimination of federal funding, being forced to close or converted to charter schools, or being forced to undergo a change in administration (NCLB, 2009; Ornstein et al., 2016).

On December 10, 2015, President Barack Obama signed legislation replacing NCLB with Every Student Succeeds Act (ESSA). The enactment of ESSA will grant more flexibility to states regarding testing, and funding for low-performing schools, as well as emphasize preparing students for success in college and careers. However, since ESSA has just been signed into law at the time of this study, it is still too early to observe and predict its actual influence on the principal labor market.

To facilitate the implementation of federal educational policies, the United States Department of Education, as the primary federal educational agency, assumes the responsibilities of overseeing federal policy implementation; administering grant funds; contracting with state departments of education, school districts, and colleges; engaging

[1] http://www2.ed.gov/policy/elsec/leg/esea02/index.html

in educational innovation and research; and providing leadership, consultative, and clearing house services to education (Ornstein et al., 2016). In order to comply with the federal accountability mandates, state governments enact statutes to raise academic standards in math and reading, mandate assessments, and establish sanctions for districts that fail to make AYP (Ornstein et al., 2016). Each state has primary legal responsibilities that are delegated from the federal government to support and maintain public schools within its borders. These responsibilities mainly include enacting legislation, determining state school taxes and financial aid to local school districts, setting minimum standards for training, recruiting personnel, providing curriculum guidelines, and establishing assessment requirements (Ornstein et al., 2016).

To facilitate state governance of public education, state governments have created state boards of education and state departments of education. The state board of education, as the most influential state education agency, serves an advisory function to the state legislature and develops rules to implement the education statutes. The state department of education, operating under the state board of education, primarily emphasizes collecting data and disseminating statistics on the status of education within the state, and overseeing implementation of state and federal laws and statutes (Kowalski, 2013; Ornstein et al., 2016).

Under the governance of states, about 14,000 local school districts provide direct services and govern schools in the United States (Kowalski, McCord, Petersen, Young, & Ellerson, 2011). Each district has a district central office that consists of the local school board, school superintendent, and central office staff (including deputy superintendents, associate superintendents, assistant superintendents, directors, department heads, and

coordinators and supervisors). Local school boards are legal extensions of state government, and are delegated by the state to assume significant decision-making authority. Local school boards have three primary responsibilities: (1) ensure that state laws, regulations, and rules are followed; (2) establish policies that are not covered by state statutes, including establishing schools, raising and expending public funds, and establishing policy and rules to govern the schools; and (3) employ a superintendent to assist day-to-day operations in the school district and school (Kowalski, 2013; Ornstein et al., 2016).

In most states, the local school board selects and hires the school superintendent, and the superintendent has the power of recruiting, transferring, and retaining principals and teachers (Ornstein et al., 2016). The school superintendent is responsible for personnel management, curriculum and instructional leadership, and administrative management, including district organization, budget planning, as well as complying with directives from the federal and state agencies. The central office staff assists the superintendent in these responsibilities (Ornstein et al., 2016).

Given the hierarchical structure of the public school system in the United States, the policy environment and policy influences on the school principal market are more complex than in other labor markets. Policy makers at federal and state levels as well as local school districts can influence both the supply and demand sides and change the equilibrium of the principal labor market over time.

During the past three decades, state governments, local school boards, superintendents, principals, and teachers all have been assuming growing responsibility and pressure to enhance student academic performance (Davis, 2015; Gregory, 2015;

Walker, 2015). These accountability policies exert a great deal of influence on the principal labor market. For instance, for the demand side, in order to achieve student academic standards mandated by the state governments, school districts attempt to search for higher-quality principals. They often raise hiring standards and qualifications such as requiring a license/certification in administration, advanced education levels, and more working experience from principals, thus influencing principals' career choices (Loeb et al., 2010; Gates et al., 2006; Whitaker & Vogel, 2005). Meanwhile, given the pressures from these state accountability policies, on the supply side of the principal labor market, principals may wish to work at schools with a higher proportion of high-performing students and supportive parents that could result in less pressure on them to achieve state academic standards (Farley-Ripple et al., 2012a). Thus, it is likely that principals evaluate both economic and psychological costs and benefits of entry into, mobility in, or exit from the principalship with the consideration of educational policies.

2.1.4 Summary

To summarize, on the supply side of the principal labor market, principals have their own preferences for objective and subjective factors regarding entry, mobility, and exit behaviors in the labor market. Meanwhile, they perform instructional leadership and other practices to maintain the functioning of school system. On the demand side of the principal labor market, schools require principals to lead and manage day-to-day school operations in order to maintain the functioning of the school system. School districts guide curriculum, instruction, and assessment to enhance student performance that meets state academic standards, determine the recruitment, rotation, and dismissal of principals,

and support principal and teacher capacity building (Farley-Ripple et al., 2012a; Ornstein et al., 2016).

From the policy environment, NCLB and state standardization reforms initiated by the federal and state governments have exerted a great deal of influence on the principal labor market. These policies have positioned school districts and principals with major responsibilities to ensure students equitably achieve state academic standards, which have engendered a great deal of pressure for principals and uneven distributions of principal quality across schools with varied student demographics (e.g., Loeb et al., 2010). Some schools with high concentrations of low-performing students, low-income students, and students of color are in a disadvantaged position of recruiting and retaining principals. Under these circumstances, policy makers could provide incentives and motivations to encourage effective principals to remain in the principalship and to sustain reform efforts of enhancing student learning. For instance, they could increase principals' economic benefits and provide beneficial working conditions, including adequate authority in school-level decision making and professional development opportunities for school leaders.

2.2 Literature Review

In this literature review section, I first reviewed literature on the possible negative and positive effects of principal turnover on school success. A detailed understanding of mixed effects of principal turnover provides a critical and balanced viewpoint when examining factors influencing principal turnover. Then with the guidance of the conceptual framework, I reviewed literature on what factors influence principal turnover.

These factors included principal characteristics and principal instructional leadership practices (supply side), and school context and principal working conditions (demand side). A better understanding of these influencing factors illustrates how policy makers attempt to create educational policies to recruit, develop, support, and retain quality principals for school success (Farley-Ripple et al., 2012b).

2.2.1 The Impact of Principal Turnover

The first issue to consider is what is at stake in principal turnover. Principal turnover could have negative or positive effects on school success, depending on the turnover frequency, the quality of principals that leave or move, and whether the school has a collaborative school culture and distributed leadership structure (Fullan, 1991; Hargreaves & Goodson, 2006; Mascall & Leithwood, 2010).

An important element of a principal's influence on a school is related to their tenure there. According to theories of principals' career trajectories, generally it takes at least five years for principals to change their identity from peripheral to insider so as to exert effective influence on school success (Hargreaves & Goodson, 2006; Mascall & Leithwood, 2010). That is, for principals to be known, trusted, and accepted by the staff, they need to become an "insider" who has an influential power in the school community of practice, rather than staying peripheral (Fink & Brayman, 2006; Hargreaves & Goodson, 2006). These insider principals are able to build trusting relationships with people that could support a reform and deal with some complex cultural issues, such as teachers' resistance to change; they are thus able to acculturate themselves into new environments (Mascall & Leithwood, 2010). Insider principals can also have great

influence on a school's community of practice and are able to sustain structural changes as well as attitudinal and social changes (Fink & Brayman, 2006).

From this perspective, frequent rotation or turnover of principals is harmful if it results in "revolving door syndrome," in which teachers perceive that their principals come and go frequently as if through revolving doors (Fink et al, 2006; Macmillan, 1996; Mascall & Leithwood, 2010). Under these circumstances, teachers could stop investing in change efforts and making progress in learning and instruction and "wait principals out" (Hargreaves & Goodson, 2006). In other words, high principal turnover may cause teachers to become more cynical and resistant to change and less-committed, thus resulting in a lack of sustainability and development for teacher and student learning, and the interruption of trusting working relationships between principals and teachers (Copland, 2003; Hargreaves & Fink, 2000; Macmillan, 2000). Empirical research has also suggested that frequent principal turnover is often associated with lower teacher morale, higher teacher turnover, and a decline in student achievement gains (Béteille et al., 2012; Copland, 2003; Farley-Ripple et al., 2012a; Fink & Brayman, 2006; Leithwood et al., 2004; Miller, 2013).

Moreover, turbulent change in school leadership can be highly disruptive to long-term school development and positive school culture (Abelson & Baysinger, 1984; Beteille et al., 2012; Fink & Brayman, 2006; Gates et al., 2006; Louis et al., 2010; MacMillan, 2000). Frequent principal turnover could interrupt the implementation or even the termination of long-term instructional programs, thus causing loss of institutional memory, inconsistency of instructional goals and reform agenda, as well as a loss of educational resources (Béteille et al., 2012; Ni et al., 2015).

From an economic perspective, a great deal of human and financial resources are lost if principals leave the education system within a short time or are frequently transferred or rotated without necessary causes (Mascall & Leithwood, 2010). According to a national report conducted by the School Leaders Network in 2014 (School Leaders Network, 2014), conservative estimates of the cost to develop, hire, and transition each principal is $75,000. Increasing principal retention rates in high-poverty schools to match those in affluent schools could save school districts in the United States $163 million annually (Sable, Plotts, & Mitchell, 2010).

In addition to negative impacts and costs of frequent turnover, there are also findings about how principal turnover could have a positive impact on school management under certain conditions. For instance, principal turnover could be beneficial to school management and student performance depending on the effectiveness of a principal that leaves and the successor who comes in (Hallinger & Heck, 1998; Leithwood et al., 2004). One measurement of principal effectiveness is through indirect impact on student achievement gains. With value-added models of student test scores while controlling for school context, Dhuey & Smith (2010) found that, in British Columbia, Canada, individual principals had a statistically significant impact on student achievement in reading and math. Specifically, one standard deviation increase in the principal quality can boost student performance by 0.194 and 0.228 standard deviations in the average math and reading scores, respectively (Dhuey & Smith, 2010). Therefore, losing a high-quality and effective principal could be detrimental to a school, but it could be beneficial for a school when an ineffective principal leaves and a more effective principal takes over (DeAngelis & White, 2011; Gates et al., 2006).

Furthermore, a certain amount of principal turnover could be beneficial to schools if it results in better matches between principals and schools, infuses innovative and productive policies into schools, and dismisses ineffective employees from the school (Abelson & Baysinger, 1984; Baker et al., 2010; Fullan, 1993). Ideally, policy makers could assign principals to a school with the best match so that principals can produce their maximum impact, improve educational efficiency, and enhance school performance (Dhuey & Smith, 2012). To that end, replacing principals is also believed by some policy makers to exert a positive influence on school improvement.

Since 2009, the United States Department of Education has awarded School Improvement Grants (SIGs) to state education agencies (SEAs) to support the academic performance of the lowest-performing schools (the United States Department of Education, 2009). According to a special report on state education officials in 46 responding states conducted by Center on Education Policy (CEP) in school year 2010-2012 (McMurrer, 2012), respondents in 25 out of 45 (about 56%) surveyed states using the school transformation model regarded "replacing principals" as a key approach in improving student achievement in SIG schools to a great extent or some extent. This policy assumed that a new principal could help to redesign school management policies, bring in new perspectives, and create a positive atmosphere for school reforms (Gates et al., 2006). However, in practice, many of these reforming schools experience difficulties in hiring replacements for principals, especially in high-poverty rural and urban schools. Moreover, a majority of districts lack assistance to identify and recruit highly effective principals; therefore, finding highly effective principals with necessary expertise is the main challenge in these schools. Simply replacing a principal may not have desired

effects on school performance. Thus, more empirical research is still needed to understand the actual effects of replacing principals.

2.2.2 Factors Influencing Principal Turnover

Given the various effects of principal turnover on school performance, it is necessary to understand what factors influence different types of principal turnover, and what kind of leadership practices are associated with principal turnover. This understanding could help policy makers provide adequate support and create positive working conditions for school leadership. Additionally, by identifying the strength of the relationships between specific principal leadership behaviors and principal turnover, educational leaders and policy makers could gain a more accurate understanding of the leadership behaviors that are associated with different transitions of principals.

Generally, principal turnover includes principals' transferring to another school, becoming a superintendent or other district level staff, becoming a teacher, retiring, or pursuing another career inside or outside of the education system (Farley-Ripple et al., 2012b; Partlow, 2007). One useful framework for thinking through the complexity of types of principal turnover comes from Farley-Ripple et al. (2012b). They idenfied four roles (teacher, assistant principal, principal, and central office) and three levels within education systems (school, district, and state) to illustrate possible career transitions for principals. When arranging a matrix of all possible transitions that a principal could annually experience, sixty possible transitions are presented, which does not account for additional types of jobs that principals could assume outside of education. Given the multiple roles and workplaces that principals can experience, it is imperative for

researchers to distinguish different types of principal transitions when examining factors influencing principal turnover (Farley-Ripple et al., 2012b).

Based on Microeconomic Labor Market Theory and existing literature, factors from both the supply and demand sides of the principal labor market can influence principal turnover. Factors from the supply side include principal characteristics (age, gender, race, education level, experience, etc.) and principal instructional leadership practices (setting school goals, supervising and evaluating instruction, and promoting school culture). Factors from the demand side include school context (urbanicity, school level, and student demographics) and principal working conditions (salary, working hours, professional development opportunities, and autonomy; see Figure 2.1).

As Figure 2.1 shows, as the supply side of the principal labor market, principal characteristics influence principals' job decisions of entry into, mobility in, and exit from the principalship. Meanwhile, principal instructional leadership practices reflect what principals do for their jobs, and how they exert influence on student performance and school management. From the demand side of the principal labor market, schools can shape contextual environment for principals; school districts, as the demand side and policy makers in the principal labor market, can determine and provide many aspects of principal working conditions in order to ensure beneficial working environments and retain principals (Farley-Ripple et al., 2012a; Ornstein et al., 2016). The policy environment can influence principal behaviors and school environmental factors from both the demand and supply sides of the principal labor market. Given the limitations of the research base, the availability of datasets, as well as the lack of measurements for various educational policies, this study does not investigate policy influence in this

framework. In the following paragraphs, I review existing literature on how varied factors from the supply and demand sides influence principal turnover.

2.2.2.1 Principal Characteristics

As the supply side of the principal labor market, principals' individual characteristics can influence principal turnover, since their characteristics are interactively associated with their objective/subjective perspectives regarding values and benefits of their job choice and transition (Baker et al., 2010; Fuller, Young, & Orr, 2007). Several studies have examined the influence of principal demographic and professional characteristics on principal turnover. These factors include principals' age (Fuller et al., 2007; Fuller & Young, 2009), gender (Akiba & Reichardt, 2004), race (Akiba & Reichardt, 2004; Baker et al., 2010; Chapman, 2005; Fuller et al., 2007; Gates et al., 2006), as well as professional experience, including years of administrative and teaching experience (Gates et al., 2006; Papa Jr., 2007), and educational level (Gates et al., 2006).

Research findings regarding principal demographics have shown few consistent results. In terms of principals' age, Fuller and Young (2009) examined the tenure and retention rates of newly hired principals in Texas public schools from 1996 through 2008. Their findings suggested that newly hired principals between 40 and 44 years old have the longest tenure, and principals who are under 30 years old have the shortest tenure. Additionally, principals between the ages of 35 and 49 tend to have greater school retention than principals of other ages, especially for middle and high school principals. Examining interactions with race and gender, Akiba and Reichardt (2004) performed

logistic regressions and concluded that, in Colorado, female administrators and administrators of color (both principals and assistant principals), younger than 40 or older than 56, had statistically significant higher attrition rates than male and nonminority groups.

Further categorizing different facets of principal turnover, Gates et al. (2006) performed multinomial logit regression on administrative data from Illinois and North Carolina from the years 1987-2001, and found that women are more likely to leave the education system and change positions than male principals. In contrast to the above findings, Baker et al. (2010) found that minority or male principals were more likely to be unstable in their positions. The inconsistent findings across the studies could result from varied principal individual preferences and from different methodology and datasets utilized in these studies. For example, Baker et al. (2010) categorized different types of principal turnover (in Missouri) and created different indicators of the time period at which a cohort member: (a) left the principalship altogether, (b) made a first move to another school, or (c) made a second move to another school. They then constructed a "stability" ratio to identify the amount of time a principal spent in any given school as a percentage of the total time that principal was in the dataset, and utilized truncated regression models and Cox Proportional Hazard models.

Principals' professional characteristics include principals' education level and working experience, as well as whether having attended preservice professional training programs. In terms of education level, Gates et al. (2006) found that principals who had a Master's degree or higher were less likely to change positions within the state system than those without an advanced degree, but educational level had no significant effect on

the probability of leaving the school system or transferring schools. For principals' years of experience, Gates et al. (2006) found negative coefficients on both linear and quadratic terms in regression for principals' years of experience, which indicated that very experienced and very inexperienced principals are least likely to change schools or positions. Similarly, Baker et al. (2010) found that more experienced principals were more likely to stay in one place and have higher stability ratios. However, they also indicated the possibility that ineffective but experienced principals were staying in their positions, which could reduce the reliability of using principals' years of experience as a signal of principal quality.

Some researchers also measured principal quality with some aspects of principal professional characteristics. For example, Gates et al. (2006) applied Barron's ranking of the undergraduate college that a principal graduated from as a proxy for unobserved principal quality, but revealed no statistically significant relationship between principal quality and principal turnover. Gates et al. (2006) acknowledged the limitation of using this measurement for principal quality, which could contribute to the insignificant findings of their study. Using a more refined measurement for principal quality, Loeb et al. (2010) applied several measurements as proxies for principal quality, including the highest degree earned, selectivity of the undergraduate college, and multiple measures of principal experience, based on the longitudinal data from Miami-Dade County public schools. Similar to patterns in other studies, they found that principals in schools with a large concentration of low-income, low-achieving students, and/or students of color often have significantly less experience and fewer credentials than do their counterparts in schools with a lower concentration of these students.

Addtionally, principals' preservice professonal training programs could influence principal turnover. These programs are mostly faciliated by universities that provide course work to aspiring principals in curriculum leadership, assessment, as well as school improvement and management (Grissom & Harrington, 2010). Mckibben (2013) examined the influence of principal preservice training programs on principal turnover, but found no significant influence of district-level preservice training programs on the probability of principals moving to another school or leaving the principal profession, based on multinomial logistic regression on SASS and PFS in 2008-2009. She speculated that gaining access to preservice training programs did not necessarily imply the value of these programs, and that the quality of training should also be considered. Given the limitation of research in this area, more research remains to be conducted to further reveal the relationship between the content, attributes, and quality of principal preservice training programs and their relationship to principal turnover.

Overall, principal demographic and professional characteristics, including principals' age, gender, race, principal experience, and preservice training, have not shown a consistent influence on principal turnover. These findings are supported by Job Choice Theory, as explained in the theoretical framework, since each principal holds his/her own objective and subjective perspectives as well as individual preferences regarding the relative importance of multiple aspects of factors in their job decision making (Behling et al., 1968).

2.2.2.2 Principal Instructional Leadership Practices

Also from the supply side of the principal labor market, principals' leadership and management practices that influence school management and student success can also be associated with principal turnover. Principals can have different amounts of influence on school performance depending on their ability to lead a school and improve student achievement; thus, the turnover of principals can also influence school performance differently (Gates et al., 2006). Therefore, it is imperative to examine principal turnover issues in conjunction with principal leadership practices in order to have a holistic picture of principal turnover.

Little research, however, has examined the relationship between principal leadership practices and principal turnover. One study looks at the influence of principal effectiveness in enhancing student achivement on principal turnover. Branch, Hanushek, and Rivkin (2013) applied a value-added model that measured principal effectiveness by examining whether the math achievement in a school was higher or lower than would be expected based on the student characteristics in the prior year. They concluded that, in Texas, from 1995-2001, the least effective principals were more likely to leave the education system; but they found no consistent relationship between principal quality and the likelihood of principals' staying at their current position. Their research emphasizes the influence of principal effectiveness on principal turnover, but lacks deeper examination of specific principal leadership practices and their association with principal turnover.

Among various principal leadership practices, instructional leadership practices form the core of what principals are intended to be responsible for, and emphasize what

effective leaders do to enhance school performance (Hallinger, 2005). Instructional leadership refers to school leadership that is highly focused on teaching and learning (Hallinger & Murphy, 1985; Hallinger et al., 2013). The concept of instructional leadership originated in the effective school movement in the 1980s, when educational policies shifted focus to improving student achievement and school performance. Research on school effectiveness has indicated some common characteristics, among which principals being instructional leaders is a key component of effective schools (e.g., Blair, 2002; Edmonds, 1981; Edmonds & Frederikson, 1978; Lezotte, 2001). The rapid development of research and practices on instructional leadership identified a need to better define and measure principal leadership behaviors. In 1985, Philip Hallinger and Joseph Murphy developed the Principal Instructional Management Rating Scale (PIMRS), including three dimensions—setting school goals, supervising and evaluating instruction, and promoting school culture—has been the most frequently used research tool for measuring instructional leadership until now (Hallinger & Murphy, 1985; Hallinger et al., 2013).

During the past two decades, under the No Child Left Behind Act (NCLB) and state accountability policies, enhancing student performance has become one of the most important tasks for principals (Leithwood et al., 2004; Loeb et al., 2010). Principals have been facing ever-increasing responsibilities and pressures, undertaking multiple roles to meet the federal and state academic standards, and accommodating the rapid development of school system and complex conditions. Thus professional standards demanding principal instructional leadership practices have grown with the development of school accountability policies and school restructuring movement across the country

(Hallinger & Murphy, 1985; Hallinger et al., 2013; Leithwood et al., 2004). Since the turn of the twenty-first century, the increasing global emphasis on accountability has strengthened the interest in instructional leadership (Hallinger, 2005). Instructional leadership remains central to leadership research and practice, despite the proliferation of other leadership frameworks such as distributed leadership and transformational leadership, due to its strong influence on student learning and reliable frameworks that guide researchers and practitioners (Hallinger et al., 2013; Marks & Printy, 2003; Mascall & Leithwood, 2010; Robinson et al., 2008).

Empirically, various instructional leadership practices can exert an influence on student learning through the avenues of setting school goals (Brewer, 1993; Hallinger & Heck, 1985; Hallinger, 2005; Leithwood et al., 2004; Marzano, Waters, & McNulty, 2005; Robinson et al., 2008); establishing and supporting instruction and curricular development (Leithwood et al., 2004; Murphy & Hallinger, 1988); and establishing school policies and nurturing a positive learning culture (Branch et al., 2012; Copland, 2003; Heck, 1992; Leithwood et al., 2004; Robinson et al., 2008).

Given the strong influence that instructional leadership has in raising student achievement (Blair, 2002; Hallinger, 2005; Hallinger et al., 2013), it is imperative to examine the relationship between principal instructional leadership practices and principal turnover. Through the three main dimensions of instructional leadership—setting school mission, managing instructional programs, and promoting school culture—principals can exert a great deal of influence on school management and student performance. A better understanding of how multiple principal roles and practices are associated with principal turnover could help policy makers support and retain stronger

instructional educational leaders for the optimization of educational resources and school success.

2.2.2.3 School Context

Principals' instructional leadership practices are enacted in specific school contexts. As part of the demand side of the principal labor market, school context reflects the circumstances that principals are working under, thus influencing principals' mobility and attrition decisions to some degree (Akiba et al., 2004; Baker et al., 2010; DeAngelis et al., 2011; Gates, 2006; Papa Jr., 2007; Partlow, 2007). These school contextual characteristics include the proportion of students of color and low-income students (Baker et al., 2010; Gates et al., 2006; Loeb et al., 2010), prior student performance (Akiba et al., 2004; DeAngelis & White, 2011; Loeb et al, 2010; Partlow, 2007), school size/enrollment (Akiba et al., 2004; Baker et al., 2010; Gates, Ringel, Santiban, Ross, & Chung, 2003), school urbanicity (Gates et al., 2006; Papa et al., 2002), school level (Baker et al., 2010; Gates et al., 2006), school type (Ni et al., 2015), number of students per full-time equivalent teachers (DeAngelis et al., 2011), and percentage of students or teachers in the school who are racial/ethnic minority (Gates et al., 2006; Papa Jr., 2007).

Compared with the findings of the influence of principal characteristics on principal turnover, the literature on the effects of school context on principal turnover has shown more consistent conclusions. Generally, schools with higher proportions of low-income, lower-performing students, students of color, and less-qualified teachers are associated with higher possibility of principal turnover (Akiba & Reichardt, 2004; Baker et al., 2010; Gates at al., 2006; Loeb et al., 2010; Papa Jr., 2007; Parlow, 2007). The

following paragraphs elaborate on these findings.

First, principals in schools with a large concentration of students of color often have higher principal turnover (Baker et al., 2010; Gates et al., 2006; Loeb et al., 2010). With administrative data from Illinois and North Carolina from 1987-2001, Gates et al. (2006) found that principals in schools with larger proportions of students of color are more likely to transfer or leave the principalship, but principals who are the same race as a plurality of students have higher career stability. Baker et al. (2010) found that a higher proportion of African American students in school was associated with higher principal turnover with truncated regression models and Cox Proportional Hazard models. By dividing schools into different quartile groups based on proportion of students of color, Loeb et al. (2010) found that the odds of principals leaving were 60% higher in schools in the top quartile of minority students than the bottom quartile, which corresponded to a 5% point difference in the probability.

Additionally, a larger proportion of low-income students are often associated with higher principal turnover. Loeb et al. (2010) found that the odds of principals leaving the principalship were about 30% higher in schools in the middle quartile of free or reduced-price lunch than those in the bottom quartile. They speculated the reasons to be many principals' preference to work in schools with a lower proportion of minority, low-income, and lower-performing students (Loeb et al., 2010).

Moreover, higher student performance in a school is often associated with lower principal turnover. Due to the formal and informal state and district sanctions and accountability pressures placed on schools, many principals prefer to work in schools with a larger proportion of high-performing students (Loeb et al, 2010). Higher-

performing students are more likely to achieve higher test scores that could meet the state academic standards, and more involvement from affluent parents and communities could bring in more support and resources, thus attracting many principals to work in these types of schools (DeAngelis & White, 2011). This hypothesis is not universally agreed upon: Akiba and Reichardt (2004) found that lower school achievement only predicted higher attrition among female leaders.

Further, Partlow (2007) found student math test scores to be the only factor that significantly influences principal turnover among eight school contextual factors, including superintendent turnover rate, building enrollment, student attendance, student mobility, pupil-teacher ratio, teacher attendance. To specify different types of principal turnover, DeAngelis and White (2011) performed multinomial logit regressions and found that schools with lower average test scores or those that fail to make Adequate Yearly Progress (AYP) often have higher odds of principal transitions. Moreover, principals who moved across districts often moved to schools with lower percentages of low-income and lower-performing students, but those who moved within districts moved to schools with similar student demographic characteristics (DeAngelis & White, 2011). They speculated that principal mobility within districts in Illinois may be determined more by district needs and decisions than by principals' preferences.

School enrollment has shown mixed results on the influence of the probability of principal turnover. Specifically, principals who transferred to another school in the same city often moved to schools with smaller enrollments, which indicates principals' preferences for smaller schools (Papa et al., 2002). Consistent with these findings, Akiba and Reichardt (2004) found that larger schools were more likely to have higher rates of

principal turnover than middle-size and small schools. They speculated that smaller schools provide leaders with more opportunities to build close relationships with faculty and students. On the contrary, Gates et al. (2006) found that principals in larger schools were less likely to transfer to another school or leave the principalship to pursue another position in the school system. Although larger schools tend to have more problems, the higher principal salary in these schools could compensate for the more complex tasks and higher pressures that they need to tackle to some extent (Gates, Ringel, & Santibanez, 2003).

For urbanicity, Gates et al. (2006) found that the probability of changing schools was higher for principals in urban areas of Chicago and North Carolina relative to principals in rural areas, although the magnitude of these differences were small. In terms of school type, Ni et al. (2014) found that principals in charter schools were much more likely to leave the education system (including retirement) compared with traditional public schools with a longitudinal dataset in Utah from 2004-2011.

School level (elementary, secondary, and high school) is another school contextual factor that influences principal turnover. Gates et al. (2006) concluded that elementary school principals had the least principal turnover, while high school principals were nearly twice as likely to change positions compared with elementary school principals, and middle school principals were about 25% more likely to change positions than elementary school principals. Again, other studies have different results; for example, Baker et al. (2010) found that middle school principals had higher turnover than those in high schools. They speculated that many principals regard middle school principalship as a stepping stone to obtain high school principalship, partly because high

school principals receive a salary premium compared with principals in elementary and middle schools.

Finally, in addition to student demographics, schools with lower percentages of highly qualified teachers, as defined by No Child Left Behind (NCLB),[2] have significantly higher odds of principals moving to schools outside of districts and leaving the education system altogether (DeAngelis & White, 2011; Papa Jr, 2007). Since NCLB mandates a basic level of qualifications, including higher expectations and requirements for teachers of core subjects, principals are under more pressure to recruit and hire highly qualified teachers, and to help teachers meet professional standards and enhance student performance (DeAngelis & White, 2011).

In summary, many schools with more low-income, low-achieving students, students of color, and less-qualified teachers (referred to hereafter as "disadvantaged schools") are disadvantaged in terms of the ability to retain quality principals (Papa Jr., 2007). These schools often have principals who have less experience, less education, and have attended less selective colleges (Loeb et al., 2010; Papa, Lankford, & Wyckoff, 2002). Furthermore, these disadvantaged schools are often used as "stepping stones" for principals to more desirable schools (Béteille et al., 2012), which may partly explain the higher principal turnover in these schools.

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[2] NCLB requires states to 1) measure the extent to which all students have highly qualified teachers, particularly minority and disadvantaged students, 2) adopt goals and plans to ensure all teachers are highly qualified and, 3) publicly report plans and progress in meeting teacher quality goals. http://www2.ed.gov/nclb/methods/teachers/hqtflexibility.html

2.2.2.4 Working Conditions

According to the International Labor Organization, working conditions cover a broad range of topics and issues, from working time (hours of work, rest periods, and work schedules) and remuneration, to physical conditions and mental demands that exist in the workplace (International Labor Organization, 2015). Compared with principal characteristics and school contextual factors that influence principal turnover, research on the influence of principal working conditions on turnover is rare.

When researchers started to explore the relationship between principal working conditions and principal turnover, they often conflated principal working conditions with school context, given the close relationship between school context and working conditions. The major reason for this is that many principals prefer to work in schools with fewer low-income, low-performing students, and students of color; and these types of schools often have better working conditions, including more resources, fewer safety and disciplinary problems, more parental involvement, fewer teacher vacancies, and less teacher and student turnover (Loeb et al, 2010). Empirically, Akiba and Reichardt (2004) constructed principal working conditions as school contexts, including poverty level, proportion of minority students, school size, school location, and student achievement level, as well as instructional and administrative expenditure per student (these findings were introduced in the above school context section). The equating of principal working conditions and school context has caused some difficulties for researchers to distinguish between effects of school context and working conditions on principal turnover.

Loeb et al. (2010) was one of the first studies that responded to this flaw in research. They applied multinomial logit models and separated the influences of student

demographics and school climate (working conditions) on principal turnover. Their findings suggested that high principal turnover in schools with more low-income, minority, and low student achievement could be driven by undesirable working conditions rather than student demographics in the schools. Furthermore, they added interactions between the school climate and quartiles of low-performing students, and indicated that a positive school climate and working conditions may be more important in reducing principal turnover in schools with high concentrations of low-performing students.

Next, I detail three ways of understanding principal working conditions. First I introduce the framework of working conditions for teachers, which have been studied extensively and could provide a perspective to understand principal working conditions from an educator's perspective. Second, I review literature on the influence of salary on principal turnover. Third, I explore factors of nonpecuniary working conditions, including principal workload, autonomy, and professional development opportunities, that could influence principal turnover.

2.2.2.4.1 Teacher Working Conditions

Given the limited research on principal working conditions, research on working conditions for teachers can provide a guiding framework to understand principal working conditions. Principals are educators, most of whom are former teachers; so principals and teachers could share some common preferences regarding working conditions. Moreover, principals and teachers work together in the same schools, so their working conditions overlap and influence one another. Therefore, it is important to look at the definition of

teacher working conditions first.

Johnson (1990) proposed a framework to analyze teacher working conditions, including physical environment (e.g., safety and comfort), economic factors (e.g., pay and job security), assignment structures (e.g., workload) and cultural and social elements (e.g., school culture, collegiality). Further developing their definition, Johnson (2006) summarized 11 detailed dimensions of teaching working conditions, including teaching assignments, working relationships among teachers, support for new teachers and students, curricular support, resources and materials, facilities, assessment, professional development, professional influence and career growth, and principal leadership. More recently, Ladd (2010) summarized and identified six key dimensions of teacher working conditions: leadership, facilities and resources, teacher empowerment, professional development, mentoring, and time. His definition categorized teacher working conditions into fewer main domains but reflect major aspects of working conditions.

Despite these differences in definition and measurements, some of these factors can be readily manipulated by policy, such as compensation, job security, resources, and professional development, while others such as school culture, working relationships, and professional influence are not easy to measure and mend in a short time. Research on teacher working conditions has laid out some directions and frameworks for the research on principal working conditions, and has pointed out some similar issues that are also faced by principals as educators in the school system.

2.2.2.4.2 Economic Benefits

Generally, principal working conditions are divided into two categories: economic benefits and nonpecuniary working conditions. In the principal labor market, economic benefits, including principal salary and other job benefits such as stipends and retirement benefits, are important factors to draw teachers into leadership positions and for principals to remain in the principalship (Akiba & Reichardt, 2004; Fraser & Brock, 2006; Pounder & Merrill, 2001). Nonpecuniary working conditions (defined as all the other factors that are not related to salary and financial benefits, including workload, autonomy, and advancement opportunities), are also critical concerns for many principals upon entering into, transitioning, or leaving schools (Farley-Ripple et al., 2012a; Loeb et al, 2010; Pijanowski et al., 2009).

The first dimension of working conditions is financial or pecuniary benefits. Principals are "economic beings" who seek to maximize their economic status by joining the organization that is most economically competitive (Young, Rinehart, & Place, 1989). Therefore, salary and benefit packages are important factors in principal career choices (Pounder & Merrill, 2001).

On the one hand, principals' salaries and job benefits are competitive compared with those of teachers (Pounder & Merrill, 2001). For instance, the average base salary of a high school principal in a medium-sized district in Utah exceeded that of a teacher with the same degree and years of experience in the system by 24% to 55% depending on administrative experience (Pounder & Merrill, 2001). Moreover, in Arkansas' largest high schools, the difference between a midcareer teacher with a master's degree and a principal was a 97.5% increase in annual salary, or $46,640 more pay per year for the

principal in 2006-2007. Although most principals are on twelve-month contracts rather than nine-month contracts like most teachers, after adjusting contract day difference, principals still showed a 67% increase in daily pay over teachers with Master's degrees and 15 years' experience (Pijanowski & Brady, 2009). The gap between principal and teacher salaries could incentivize teachers to move to various leadership positions (Pounder & Merrill, 2001). The relative salaries, which reflect pecuniary advantages of school principalship over many other educator positions, are perceived by principals as the strongest objective factor of job desirability of the principalship, which explained 38% of total variance in rating of job attraction and intentions (Composite Job Desirability Index) (Pounder & Merrill, 2001).

On the other hand, many principals still perceive the gap between teacher and principal salary to be too small to reflect the much greater responsibility that principals assume compared with teachers (Pounder & Merrill, 2001). Thus, unsatisfactory principal salaries could be one of the reasons why principals leave for other positions (Pounder & Merrill, 2001). In fact, the gap in compensation between principals and teachers has narrowed to the point that it may engender a discouraging impact on principal candidates or current principals who are considering entering or remaining in the principalship (Pijanowski & Brandy, 2009).

Given the strong influence of principal salary on their job desirability and satisfaction, empirical evidence has indicated that higher principal salaries are often associated with lower principal turnover rates (Akiba & Reichardt, 2004; Baker et al., 2010; Papa et al., 2002; Papa Jr., 2007; Pijanowski & Brandy, 2009). Akiba and Reichardt (2004) concluded that salary was significantly associated with principal

turnover decisions, and principals were more likely to leave when they expected an increase in compensation if transferring to another school. Additionally, Papa Jr. (2007) found that schools paying one standard deviation below the mean salary were 9.5 times more likely to lose their principals compared to schools paying one standard deviation above the mean salary. Some research further considers the influence of relative salaries compared with peers on principal turnover. For instance, Baker et al. (2010) noted that a principal's relative salary, compared to peers in the same labor market, was the most "consistent and potential policy lever for principal retention" (p. 551). Specifically, principals are able to leverage school-to-school moves for an average change in relative salary of about 5% (Baker et al., 2010).

Furthermore, the compensation gap between principals in different areas also varies dramatically. For example, principal salaries are much lower in smaller, more rural, and poorer districts (Pijanowski & Brady, 2009). Some researchers argued that, due to the challenges of leading larger schools, it is necessary to offer higher salaries to principals in these schools to compensate for the more complex tasks and higher pressures they need to tackle (Gates et al., 2003; Gates et al., 2006). From a policy perspective, it is imperative to differentiate principal compensations and create educational policies that reflect the gap among educators' roles and responsibilities, across schools of different contexts, in order to provide incentives and fairness for principal retention (Pijanowski & Brady, 2009). Moreover, salaries can be an important incentive and policy lever for recruiting and retaining highly qualified principals, especially in disadvantaged schools (Papa et al., 2002).

2.2.2.4.3 Nonpecuniary Working Conditions

Other than salary, some nonpecuniary working conditions can also influence principal turnover. With state and federal accountability systems placing increasing pressures on school-level leaders to improve student performance, principals assume expanding roles, challenges, and a growing workload from multiple stakeholders (Loeb et al, 2010; Pijanowski et al., 2009). Under these circumstances, oftentimes economic benefits alone could not be adequate to compensate for the stress and adverse working conditions principals face (Pijanowski et al., 2009). As introduced in the conceptual framework, principals are also "psychological beings" who choose jobs to meet their psychological needs and emotional expectations (Young, Rinehart, & Place, 1989). From this perspective, as the supply side of the principal labor market, principals often seek the principalship in schools and districts with the community environments that are more satisfying and compatible with their own psychological needs (Behling et al, 1968; Pounder & Merrill, 2001; Tom, 1971). Thus, many nonpecuniary working conditions, such as workload, autonomy, district/teacher/parent supports, and professional development and career advancement opportunities, are also important concerns for many principals when considering the entry, mobility, or exit of the principalship (Farley-Ripple et al., 2012a; Loeb et al, 2010; Pijanowski et al., 2009).

Given the broad range of nonpecuniary working conditions and the lack of measurements of many possible causal factors such as principal autonomy and district support, very limited empirical research has examined the relationship between nonpecuniary working conditions and principal turnover. Compared with other factors that influence principal turnover, these aspects are the least researched, but could have an

important influence on principal turnover (Fuller et al., 2015; Tekleselassie & Villarreal, 2011).

Only a few studies have examined the influence of nonpecuniary working conditions on principal turnover. For instance, Fraser & Brock (2006) applied narrative surveys and structured interviews on 47 random principals in elementary and secondary schools in New South Wales, and identified incentives and disincentives of working conditions that influence principal turnover. The incentives included district support, professional development opportunities, union, support from teachers and parents, available resources, as well as principal autonomy to make decisions. The disincentives of principal working conditions included a sense of isolation, stress from work, insufficient remuneration, staff issues, demanding and disgruntled parents, and unrealistic expectations from employing authorities.

These trends are also similar for principals in the United States. In a case study with more than 100 administrators' career transitions within Delaware education system, and semi-structured interview data from 48 principals and assistant principals, Farley-Ripple et al. (2012a) found that economic benefits, working relations with multiple stakeholders (teachers, parents, school districts, and school boards), as well as the availability of opportunities into administration or the district central office are all critical incentives for principal retention. Notably, most of these incentives are not financial in nature. More recently, Fuller, Hollingworth, and Young (2015) summarized four indirect yet powerful working conditions that influence principal turnover in small and mid-sized urban districts. These four factors include state policy, leadership preparation programs, principal autonomy, and district policy. They found that intrinsic rewards, overall

workload, and a feeling of effectiveness were important factors influencing principal retention. Moreover, principals in small and mid-sized urban districts perceived state accountability policies and statewide testing systems, as well as principal workload, to be more influential than those in other districts.

These few studies indicated that working conditions, including principal workload, autonomy, and professional development opportunities, are important factors for principal turnover decisions (Farley-Ripple et al., 2012a; Fuller et al., 2015; Pijanowski & Brandy, 2009; Loeb et al., 2010). However, these studies mostly applied case studies and narratives that didn't evaluate the contribution of each factor and its influence on principal turnover. In the following paragraphs, I explored how principal workload, autonomy, and professional development could influence principal turnover in detail.

First, principal workload is one aspect of principal working conditions that could influence principal turnover. The balance of professional and personal lives reflects principals' concerns over their life quality and health (Pounder & Merrill, 2001). Therefore, a heavy workload and extra responsiblities are regarded by principals as unattractive job attributes that affect the job desirability (Pounder & Merrill, 2001). Consistent with labor market theory, adequate compensation for working hours that are required by the school district determines the supply of principals to a large degree (Borjas, 2014).

Analyzing the influence of principal workload on principal turnover intentions rather than the actual behaviors, Tekleselassie and Villarreal III (2011) conducted a three-level Generalized Multilevel Model based on Schools and Staffing Survey in 2003-2004.

They concluded that work overload was unrelated to departure intentions, but increased the intentions of principals to change schools. They speculated that a heavier workload could cause principals to consider transferring to another school that have lighter workload and shorter working hours. Since principal career transition intentions typically occur prior to actual mobility or departure behaviors (Allen, 2004), principal intentions of departure or mobility can serve as a "proxy to understand the antecedents of the actual act" (Tekleselassie & Villarreal III, 2011, p. 259). This study further explores relationships between principal workload and its effects on turnover.

Another important factor that could influence principal retention is adequate principal autonomy in decision making on school management. Principals need considerable autonomy to work with the school communities to establish and achieve meaningful school improvement goals and cultivate positive school culture (Fink & Brayman, 2006). If states and local school districts exercise excessive influence on setting directions, establishing policies, and hiring teachers, principals would feel themselves as "puppets" without influential power on school reforms and have little leeway to influence school decision making (Tekleselassie & Villarreal III, 2011).

Specifically, principal autonomy over supervision (e.g., principals' perceived influence over spending, teacher evaluations, hiring teachers, and disciplinary policies) significantly influence principals' departure and mobility intentions (Tekleselassie & Villarreal III, 2011). Among all the areas upon which principals exert their influence, the areas of recruiting effective teachers, transferring teachers, and discharging unsuitable teachers are where principals experience the greatest gap between the authority they need in order to make changes in school and the actual influence they possess that is delegated

from the district central office (Adamowski, Therriault, & Cavanna, 2007). This "autonomy gap" is especially true for principals in urban and low-performing schools (Adamowski et al., 2007; Papa & Baxter, 2008). Lack of influence over major decisions on school matters could hurt principals' emotions in school reforms and job satisfaction, which causes principals transfer to another school, or even leave the education system (Adamowski et al., 2007). On the other hand, providing principals with considerable autonomy allows them to develop shared vision and efforts within the school communities, thus facilitating school improvement goals and enhancing student learning (Fink & Brayman, 2006; Hargreaves & Goodson, 2006).

Finally, principal professional development is another important dimensions that could influence princpal turnover. Principal professional development programs are defined as formal opportunties for continuing education that principals undertake in conjunction with their job responsibilities (Grissom & Harrington, 2010). These professional development programs, including university course work, workshops, and mentorship programs, are faciliated by the school district (primary source), the local state Department of Education, professional organizations, or other third-party providers. They aim at developing leadership capacity for principals to promote school effectiveness and management (Farley-Ripple et al., 2012a; Hopkins, 2003). Many principals regard professional development and educational training opportunities as important concerns in career choices (Pounder & Merrill, 2001; Young, Rinehart, & Place, 1989). Despite the importance of principals' professional development on their professional expertise and capacity, little research has examined the relationship between professional development opportunities and principal turnover.

Given the scarcity of research on the relationship between principal working conditions and principal turnover, the complex interplay of school contexts and working conditions, as well as a broad range of factors that constitute working conditions that are difficult to measure; no common framework of principal working conditions has been agreed upon by researchers (Fuller et al., 2015). To fill this research gap, I explored how some important aspects of principal working conditions, including principal salary, workload, autonomy, and professional development, could influence principal turnover.

To summarize the literature review, research on factors that influence principal turnover is limited, and most has focused on the influence of principal characteristics and school contextual factors. In particular, schools with a larger proportion of low-income, low-performing students, students of color, or less-qualified teachers are associated with higher possibility of principal turnover (Akiba & Reichardt, 2004; Baker et al., 2010; Gates at al., 2006; Loeb et al., 2010; Papa Jr., 2007; Parlow, 2007). Beyond principal characteristics and school contextual factors, how principal instructional leadership practices and principal working conditions influence principal turnover have been rarely examined. Given the importance of these factors and their relationship to policy environments, I hypothesize that stronger instructional leadership practices (which focus on the goals of improving student performance, spend more time on student instruction and learning, and nurture positive school culture) and positive working conditions (such as higher principal salary, less workload, more professional development opportunities, and adequate principal autonomy) are associated with a lower probability of principal turnover.

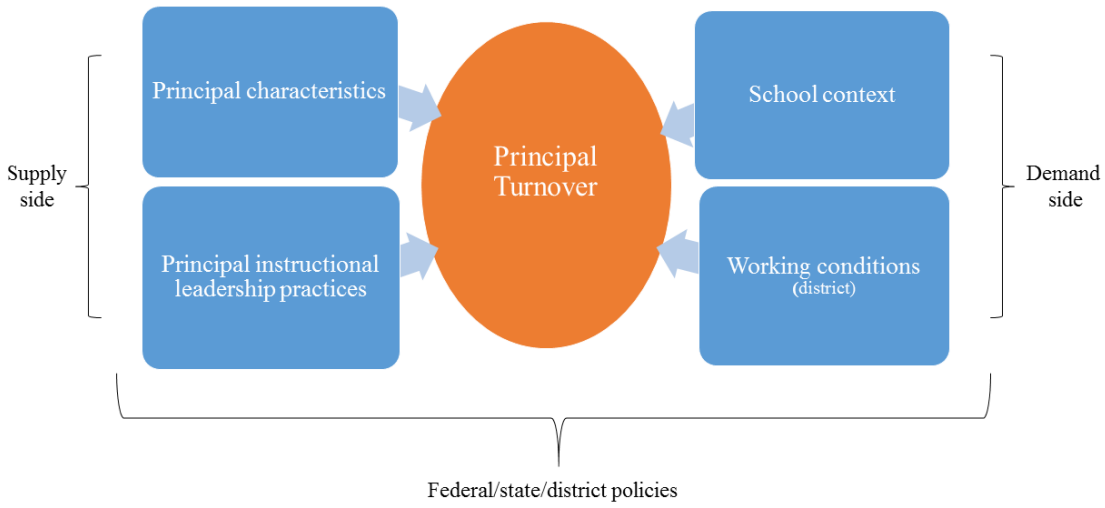

Figure 2.1 Conceptual Framework of Principal Turnover in the Principal Labor Market

CHAPTER 3

METHODOLOGY

Based on the conceptual framework of the principal labor market and literature review on factors that influence principal turnover, I examined how principal characteristics (age, gender, race, education level, and administrative/teaching/management experience), school context (school urbanicity, enrollment, school level, and student demographics), principal instructional leadership practices (setting school goals, supervising and evaluating instruction, and promoting school culture), and working conditions (salary, autonomy, contract type, workload, and professional development), are associated with different types of principal turnover. I specifically focused on the influence of principal instructional leadership practices and principal working conditions on principal turnover, given the scarcity of research in these areas and the importance to policy making.

In this methodology section, I first introduce data sources (sampling and scope of data), variable measurements, and analytical strategies of this dissertation. I utilize the Schools and Staffing Survey (SASS) in 2011-2012 and its Principal follow-up survey (PFS) in 2012-2013 from the National Center for Education Statistics (NCES). Then I introduce the variables and analytic strategies of this study. I perform descriptive analysis, mean comparison, and multinomial logit regression regressions to examine what

factors are associated with different types of principal turnover.

The purpose of this study is to answer the following research questions:

1) How do principal characteristics and school context influence the probability of different types of principal turnover (mover, leaver, promoted, or retired) compared with stayers?
2) How are principal instructional leadership practices associated with different types of principal turnover, while controlling for principal characteristics and school context?
3) How do principal working conditions influence different types of principal turnover, while controlling for principal characteristics and school context?

3.1 Data Sources

This study utilizes data from the 2011-2012 School and Staffing Survey (SASS) and its Principal Follow-up Survey (PFS) from 2012-2013, sponsored by the National Center for Education Statistics (NCES). SASS is the largest and the most extensive survey of K-12 districts, schools, teachers, and administrators in the United States today (Goldring & Taie, 2014). SASS has four core components: The School Questionnaire, the Teacher Questionnaire, the Principal Questionnaire, and the School District Questionnaire. These questionnaires are sent to respondents in public, private, and Bureau of Indian Education/tribal schools. The SASS questionnaire collects a broad range of information, including principal demographic characteristics, principal experience, salary, professional development, teacher performance, school climate and safety, parent/guardian participation in school events, and attitudes about educational

goals and school governance (Goldring & Taie, 2014). The nationally representative scope of this survey provides greater generalizability and broader guidance for policy makers compared with single and multi-state studies.

The Principal Follow-up Survey (PFS) is a component of the Schools and Staffing Survey (SASS). The 2012-13 PFS was sent during the 2012-2013 school year to all schools that had a principal who responded to the 2011-2012 SASS Principal Questionnaire. This survey assesses how many principals in the 2011-12 school year still worked as a principal in the same school during the 2012-13 school year, how many moved to become a principal in another school, and how many left the principalship, and so forth. The SASS restricted-use datasets contain confidential indicators to protect respondents' private information. Identifiers such as principal control ID, district ID, and state ID can be used to merge across all SASS data files (e.g., school district, schools, and teachers) to provide a rich dataset for analyzing principals in K-12 schools in the United States (NCES, 2014).

The 2011-2012 SASS and 2012-2013 PFS primarily utilized a mail-based collection methodology to gather data with telephone and field follow-up. SASS uses a stratified probability sample design to ensure that the samples of schools, principals, teachers, districts, and school library media centers contain sufficient numbers for reliable estimates (NCES, 2014). Approximately 9,200 schools were contacted by NCES for this survey (7,500 public schools and 1,700 private schools). The PFS instrument in 2012-2013 was sent to all schools whose principals were interviewed in SASS in 2011-2012. The response rates for 2011-2012 SASS and 2012-2013 PFS are very high. The SASS response rates for traditional public school and public charter principals are 72.9%

and 69.7%, respectively. Additionally, the PFS for traditional public school and public charter principals had response rates as high as 99.7% and 99.1% (NCES, 2014).

By applying a replicate weighting technique, the SASS and PFS samples are intended to represent the population of 114,330 school principals (including 89,530 public schools and 24,800 private schools) in the United States. Unlike simple random sampling, complex sample designs like SASS often include stratifying the school sample, oversampling new teachers, and sampling with differential probabilities (NCES, 2010). These survey procedures deviate from the assumptions of simple random sampling, which could result in underestimation of the variability of the estimates (NCES, 2010). Therefore, replicate weights are used in SASS and PFS to produce more accurate variance estimates (Cox & Cox, 2015). These files include a set of 88 replicate weights designed to produce variance estimates. In this study, I applied these replicate weights to compute sampling errors.[3]

In order to obtain principal occupational status in the following year, I merged the data from the principal questionnaire in SASS from 2011-2012 on the Follow-up Survey in 2012-2013 based on principal control ID. Then I merged the data from the School District Survey on this merged dataset based on district ID, in order to obtain extra information regarding district demographics and policies (such as principal tenure system and salary schedule). I delimited this research to the sector of public schools, including traditional public schools and public charter schools, because private schools and Bureau of Indian Affairs schools often have their unique governance and funding structures

[3] I utilized "survey set" command on the data (SVY SET) by defining the probability weight, the balanced repeated replication weights (brrweight (varlist)), and the variance estimation type (vce (brr)), and turning on the mean square error formula (mse) in Stata.

compared with public schools. In the regression models, I excluded the schools that exclusively provide special education, career/ technical/ vocational education, alternative education, or early childhood programs/day care centers, because the management structures, instructional leadership practices, and working conditions in these schools are generally different from regular schools.

3.2 Variables

In this study, the dependent variable is principal turnover. The independent variables are principal characteristics, school context, principal instructional leadership practices, and principal working conditions. I describe these variables, including variable names, SASS labels, as well as the renaming and recoding of these variables in Table 3.1.

3.2.1 Principal Turnover

The PFS in 2012-2013 asks the current occupational status of principals who responded to the 2011-2012 SASS Principal Survey. The responses in the survey include whether a principal stayed at the same school, moved to another school (in the same or different district) but remained a principal, still worked in a K-12 school but not as a principal (working in the same/different/private school), still worked in K-12 education, but not in a K-12 school (working in a district central office as a superintendent or other district staff, or working at a job associated with K-12 education, but not directly associated with any schools or school system), worked at a job outside of K-12 education, and other statuses (including on leave and deceased).

Given the complexity of principal status in the questionnaire and important types

of principals' career status according to Farley-Ripple et al. (2012b), I categorized these principal career statuses based on the features of each category (role change, location change, etc.). Given the small proportion of principals who leave the education system or change roles in school, I combined these two categories since they both indicated that principals stopped being a principal in a school. I created an independent category—principals who get promoted to the district central office, because moving to the district central office could be regarded as a promotion to a higher level administrative position for principals. Further, I hypothesized that those who got a promotion to the district could have different characteristics and behaviors compared with those who leaved the education system, moved to another school, or changed roles to other positions. Principals who retired are also a unique category that need to be separate from the other categories, since retirement is a planned career transition and many social job benefits are associated with the retirement decision.

Based on the above logic, I created a categorical variable, principal turnover (shown in Table 3.1), including the following statuses:

- Stayer: still worked as principal at this school (coded as 0),
- Mover: transferred to another school but remained principal (coded as 1),
- Leaver: still worked in a K-12 school but not as a principal, or took job outside of the school system (including those who leave K-12 education and those who work at a job associated with K-12 education, but not directly associated with any schools or school system; coded as 2),
- Promoted: worked in the district central office (as a superintendent or other district staff; coded as 3),

- Retired (coded as 4),
- Others: on leave (e.g., maternity/paternity, military, disability, sabbatical), deceased, and other statuses that were unable to obtain.

Due to the less predictable feature of the status "other," I excluded this category from the study, and only focused on the principal statuses of stayer, mover, leaver, promoted, and retired.

3.2.2 Principal Characteristics and School Context

As shown in Table 3.1, principal personal and professional characteristics influence principals' preferences for job choice and leadership practices, so they are important factors influencing principal career transitions (Baker et al., 2010; Fuller et al., 2007; Gates et al., 2006). Moreover, school contextual factors have shown significant influence on principal turnover (e.g., Akiba et al., 2004; Baker et al., 2010; DeAngelis et al., 2011; Gates, 2006; Papa Jr., 2007; Partlow, 2007).

Principals' demographic and professional characteristics are obtained from the 2011-2012 Principal Questionnaire from SASS. They include age (A0330), gender (A0320), ethnicity/race (A0322-0326), whether or not a principal has a masters' degree (A0055), principal experience (including total years of experience serving as a principal (A0025), years of experience serving as a principal of this school (A0026), years of teaching experience (A0028), whether or not a principal has management experience outside of the field of education (A0039)), attended aspiring principal preparation programs (A0037), and licensed/certified in "school administration" (A0038). To facilitate the interpretation of different age groups, I recoded age into three subgroups:

younger than 40 (early), between 40 and 54 (mid-career), and older than 55 (veteran).

School contextual information is obtained from the restricted-use of 2011-2012 SASS Principal Questionnaire. School context includes school level (elementary, secondary, and combined) (SCHLEVE2), urbanicity (URBANS12), school type (CHARFLAG), enrollment (ENRK12UG), whether the school made adequate yearly progress (AYP) in the previous year (A0293), percentage of minority students (MINENR), percentage of enrolled students approved for National School Lunch Program (NSLAPP_S), estimated number of students per full-time equivalent teachers (STU_TCH), number of students expelled and suspended from this school (A0130, A0131), percentage of minority teachers (MINTCH), and the total number of students enrolled in this district in grades K-12 and comparable ungraded levels (D0418).

3.2.3 Instructional Leadership Practices

With the limitations of the SASS and PFS datasets, I am only able to include a few aspects of instructional leadership practices. These variables could provide some preliminary understanding regarding these relationships, thus helping researchers, practitioners, and policy makers have a clue of what leadership behaviors are associated with different types of principal turnover.

As Table 3.1 shows, the variables of principal instructional leadership practices include:

(1) The goal setting dimension refers to the most important goal in school management (A0080). I generated three dichotomous variables. If a principal considered the most important goal in school management as building basic literacy skills (reading,

math, writing, speaking), then I created a variable goal_basic=1, otherwise 0; if a principal considered the most important goal in school management as encouraging academic excellence, I generated a variable goal_excel=1, otherwise 0; if a principal considered the most important school goal as preparing students for postsecondary education, I generated a variable goal_post=1, otherwise 0.

(2) The supervising and evaluating instruction dimension includes: hours spent on all school related activities (A0240), hours spent on interacting with students (A0241), percentage of time spent on different tasks in school (administrative tasks, curriculum and teaching related tasks, student interactions, parent interactions) (A0242-A0246), number of formal classroom observations conducted on tenured/experienced and new/non-tenured teachers (A0272, A0273).

(3) The promoting school learning culture dimension includes: whether providing teachers with time for professional development during regular contract hours (A0100), and whether providing incentives for learning (programs or activities where students participate in the community during or after normal school hours, programs to acknowledge student achievement, incentive/reward programs that encourage students' academic success, programs designed to help students prepare for the next grade or college; A0145-A0148).

3.2.4 Working Conditions

As shown in Table 3.1, working conditions include days required to work (A0247), principal contract type (A0248), salary (A0335), whether there is a tenure system for principals in this district (D0457), whether this district currently uses any

incentives to recruit principals (D0475), whether there is salary schedule for principals in this district (D0500), frequency of problems that occur at the school (A0149-A0161, 1-5 Likert scales), whether a principal is rated in a formal evaluation this school year (A0249), whether student test score outcomes or growth are included as an evaluation criterion in the evaluation (A0250), frequency of principal formal evaluation (A0251), whether the principal participated in any professional development activities related to the role as a principal in the past 12 months (A0059), as well as principal autonomy (including principal perceived influence on decision making on 7 domains: setting performance standards, establishing curriculum, determining the content of in-service professional development programs, evaluating teachers, hiring new teachers, setting discipline policy, and budget spending, in 1-5 Likert scales) (A0083-A0089).

The variable, principals' salary, had a skewness of 0.75, a bit higher than the skewness of normal distribution of 0, meaning that salary was skewed to the right. The Kurtosis was 4.3, also larger than that of normal distribution of 3, indicating a heavy-tailed distribution. Additionally, the variation of salary is also greater for the higher salaries. Given these characteristics, I applied a logarithmic transformation of principals' salary to better fit a normal distribution in the subsequent regression models. Additionally, due to the relationship between the number of suspended students and school enrollment, I created a student suspension ratio that was equal to the proportion of suspended students in a school divided by school enrollment in order to better reflect student disciplinary conditions.

3.3 Analytic Strategies

For statistical analysis, I utilized individual principals as the unit of analysis. Before conducing regression models, I performed descriptive analysis, normal distribution tests (histogram graphs, pp-plot, qq-plot, Skewness/Kurtosis tests, and Shapiro-Wilk tests), chi-square test, and Kruskal-Wallis test to examine whether the distribution of key variables significantly differ across different types of principal turnover, including stayer, mover, promoted, leaver, and retired.

3.3.1 Mean Comparisons

The Kruskal-Wallis test, developed by Kruskal and Wallis (1952), is a nonparametric test that assesses significant differences in a continuous dependent variable by a grouping independent variable (with three or more groups). Different from the Analysis of Variance (ANOVA) that requires a sample to be normally distributed and to have equal variance on the scores for each group, Kruskal-Wallis test allows for statistical testing on means of continuous variables that are not normally distributed. The Null hypothesis of the Kruskal-Wallis test is that different groups of principals are from identical populations, so p value smaller than 0.05 means that the distribution of a variable significantly differs across principal turnover groups.

For a categorical variable, such as gender, race, and urbanicity, I performed the Chi-square Test of Independence to test whether the variable was distributed differently in the form of frequency counts for different principal turnover groups. The Chi-square test is an omnibus nonparametric statistical test that examines the relationship between two categorical variables (Gall, Gall, & Borg, 2003). P value smaller than 0.05 means

that the frequency distribution of a variable significantly differs across principal turnover groups.

3.3.2 Multicollinearity and Correlation Coefficients

I checked for multicollinearity and correlation coefficients between variables, due to the large number of predictors that are possibly correlated in this study. To detect multicollinearity between predictor variables, I estimated Variance Inflation Factors (VIF). VIF measures how much the variance of the estimated regression coefficients are inflated as compared to when the predictor variables are not linearly related. Preliminarily, VIF larger than 10 is considered to indicate multicollinearity. The high correlation between predictor variables is likely to cause the discrepancy and imprecision of regression outcomes. According to Tabachnick & Fidell (2012), the independent variables with a bivariate correlation of more than 0.70 should not be included in the regression analysis.

3.3.3 Independence of Irrelevant Alternatives (IIA) Assumption

Before the multinomial logistic regressions, I performed Hausman-McFadden test to examine the Independence of Irrelevant Alternatives (IIA) Assumption (Gates, et al., 2006) to ensure the relative probability of excluding a principal moving to another school, changing roles or leaving the school system, getting promoted to the central office, or retired was not affected by removing either one of the possible outcomes. These IIA tests ensure no systematic change in the relative probability of principal turnover when excluding one of the turnover groups from the model. For instance, the relative

probability of principals moving to another school is not affected by removing either one of the other principal turnover groups.

This IIA assumption is most frequently assessed with a Hausman-McFadden test that was devised by Hausman and McFadden (1984). The basic idea for the test is to test the reverse implication of the independence from irrelevant alternatives property (Hausman & McFadden, 1984; Long & Freese, 2006). The test statistic requires the computation of a quadratic form involving the difference of the parameter estimates and the differences of the estimated covariance matrices (Hausman & McFadden, 1984; Cheng & Long, 2007). For implication, the p values in the Hausman-McFadden test larger than .05 or negative indicated that the independence of irrelevant alternatives (IIA) assumption was not violated, thus, the multinomial logistic regression models are valid to perform statistically (Long & Cheng, 2004).

3.3.4 Multinomial Logistic Regressions

Because a principal can make different types of career transitions (mover, leaver, promoted, and retired), I performed multinomial logistic regressions to estimate how the probability of different types of turnover can be explained by principal characteristics, school context, principal instructional leadership practices, and working conditions. To estimate parameters of the models, I applied maximum likelihood estimation. I used function (1) to represent all the three models:

$$\log\{\Pr(\mathbf{Y}_i = m/\Pr(\mathbf{Y}_i = 0)) = \beta_0 + \beta_1(\text{principal characteristics}) + \beta_2(\text{school context}) + \beta_3(\text{principal instructional leadership practices}) + \beta_4(\text{working conditions}) + \alpha_j + \varepsilon_i \quad (1)$$

The outcome variable Y_i, principal status, follows a multinomial distribution. The risk of principal *i* moving, leaving, promoting, or retiring (*m*=1,2,3, or 4) relative to staying (*m*=0, the reference category) is a function of the four sets of independent variables. α_j is region fixed effect, and ε_i is the error term.

For the independent variables, Model 1 only includes principal characteristics. Model 2 only includes school contextual factors. Model 3 includes both principal characteristics and school context as independent variables. In Model 4, I examined how principal instructional leadership practices were associated with the probability of different types of principal turnover, while controlling for principal characteristics and school context. For Model 5, I controlled for principal characteristics and school context, and looked at how working conditions were associated with the probability of different types of principal turnover. In the final model, I included all the independent variables and observed the relative importance of each factor on the likelihood of different types of principal turnover. Moreover, all these models include region fixed effects at the principal level to account for the fixed effects in four geographic regions in the United States: Northeast, Midwest, South, and West. By controlling for the region fixed effects, the characteristics and conditions of regional principal labor market could be accounted for to some degree.

The relative risk ratio (RRR) is interpreted as the risk of a principal making a certain type of turnover (*i*=1,2,3, or 4) relative to staying (*i*=0) is a function of these above four categories of predictor variables. A RRR greater than 1 means that principals are more likely to make a certain type of transition compared with stayers. Since multinomial logistic regressions are estimated with maximum likelihood estimates

through an iterative process and are not calculated to minimize variance as the Ordinary Least Squares (OLS) approach, an equivalent statistic to R-squared does not exist. In order to evaluate the goodness-of-fit of these models, researchers have developed several "pseudo R-squareds", including McFadden's, Efron's, and Cox & Snell pseudo R-squareds.[4]

This study utilizes Stata software which estimates McFadden's R squared. The McFadden's pseudo R-squared generally ranges from 0 to 1, with higher values indicating better model fit. According to McFadden (1977), the values of 0.2 to 0.4 for McFadden's Pseudo R-squared represent excellent fit. When compared to another pseudo R-squared of the same type, on the same data, and predicting the same outcome, the higher pseudo R-squared indicates that the model better predicts the outcome (McFadden, 1977).

[4] http://www.ats.ucla.edu/stat/mult_pkg/faq/general/Psuedo_RSquareds.htm

Table 3.1

Variable Description

Category		Variables	SASS Label	New Variable Name	New values (recode)
Principal turnover		Occupational status of principal in 2012-2013	ATAC	status	Stayer=0 , mover=1, leaver=2, promoted=3, retired=4
Principal characteristics	Demographics	Age	AGE_P	age	< 40 (young), between 40 and 54 (middle-aged), and > 55 (older).
		Male	A0320	male	Male=1; female=0
		Race (White)	A0322	white	White=1; non-white=0
		Master's degree or higher	A0033	master_degree	Yes=1; no=0
	Professional characteristics	Years of total administrative experience	A0025	prin_exp	Continuous
		Years of administrative experience of this school	A0026	prin_exp_this_sch	Continuous
		Total years of teaching experience	TCHEXPER	tch_exp	Continuous
		Management experience outside of K-12 education	A0039	mgt_exp	Yes=1; no=0
		Participation in Aspiring Principal Programs before the principalship	A0037	aspiring_program	Yes=1; no=0
		License/certificate in school administration	A0038	certificate	Yes=1; no=0

Table 3.1 (cont.)

Category		Variables	SASS Label	New Variable Name	New values (recode)
School Context	School characteristics	School level	SCHLEVE2	school_level	Elementary=1; secondary=2; combined=3
		Urbanicity	URBANS12	urban	City=1, suburb=2, town=3, rural=4
		Charter school	CHARFLAG	charter	Yes=1, no=0
		Total enrollment	ENRK12UG	enrollment	Continuous
		Made AYP in 2010-2011	A0293	AYP	Yes=1, no=0
	Student & teacher characteristics	% students of racial minority	MINENR	min_student	Continuous
		% students eligible for National School Lunch Program (NSLP)	NSLAPP_S	frl	Continuous
		Number of students per full-time teachers in school	STU_TCH	stu_tch	Continuous
		% teachers of a racial minority	MINTCH	min_teacher	Continuous
		Total number of students enrolled in this district	D0418	district_enroll	Continuous

Table 3.1 (cont.)

Category		Variables	SASS Label	New Variable Name	New values (recode)
Principal instructional leadership practices	Goal Setting	Most important goals in school	A0080	most_impt_goal	Basic (most_impt_goal=1)
					Excellent (most_impt_goal=2)
					Future (most_impt_goal=3/4)
	Supervise Instruction	Hours spent on all school related activities	A0240	hours_sch_activities	Continuous
		Hours spent on interacting with students	A0241	hours_interact_stu	Continuous
		Percentage of time spent on administration, curriculum and teaching, student interactions, parent interactions)	A0242	task_admin	Continuous
			A0243	task_curriculum	Continuous
			A0244	task_student	Continuous
			A0245	task_parent	Continuous
		How many formal classroom observations conducted on tenured/ experienced and new/non-tenured teachers	A0272	obs_exp_tch	Continuous
			A0273	obs_new_tch	Continuous
			A0274	obs_exp_tch_len	Continuous
			A0275	obs_new_tch_len	Continuous
	Promoting culture	Community programs	A0145	prog_community	Yes=1, no=0
		Programs that acknowledge student achievement	A0146	prog_achievement	Yes=1, no=0
		Incentive/reward programs encouraging academic success	A0147	prog_reward	Yes=1, no=0
		Programs that prepare for the next grade or college	A0148	prog_college	Yes=1, no=0

Table 3.1 (cont.)

Category		Variables	SASS Label	New Variable Name	New values (recode)
Working Conditions	Workload	Days required to work	A0247	days_require	Continuous
	Economic benefits	Contract type	A0248	contract_type	Collective bargaining/ meet-and-confer agreements=1; no=0
		Annual salary	A0335	salary	
		Tenure system for principals	D0457		Yes=1, no=0
		District uses any incentives to recruit principals	D0475		Yes=1, no=0
		Salary schedule for principals	D0500		Yes=1, no=0
	School safety	Frequency of problems occur at school	A0149-A0161		
		Number of students suspended	A0131	student_suspended	
	Principal evaluation	A principal is rated in a formal evaluation this year	A0249	prin_eval	Yes=1, no=0
		Whether student test scores are a criterion in the evaluation	A0250	prin_eval_score	Yes=1, no=0
		Frequency of principal evaluation	A0251	freq_prin_eval	
	PD	Professional development	A0059	PD	Yes=1, no=0
	Autonomy	Setting performance standards	A0083	set_standards	No influence/ not applicable=1; minor influence=2; moderate influence=3; major influence=4
		Establishing curriculum	A0084	establish_curriculum	
		Determining teacher professional development	A0085	determine_PD	
		Evaluating teachers	A0086	evaluate_teacher	
		Hiring new full-time teachers	A0087	hire_teacher	
		Setting discipline policy	A0088	set_discipline	
		Deciding budget spending	A0089	decide_budget	

CHAPTER 4

FINDINGS

In this chapter, first I summarize some descriptive findings of the variables in this study. Second, I examine whether significant differences exist in the means of each predictor variable across different types of principal turnover groups: stayers, movers, leavers, promoted, and retired, in order to understand the distributions and characteristics of principals in different groups. Third, before the multinomial logistic regressions, I conduct a series of statistical analysis: 1) In order to reduce the high dimensions of items in one variable from the principal questionnaire, I apply factor analysis on the variables—school safety and principal autonomy, and generated composite variables; 2) I assess the multicollinearity and correlation coefficients of the independent variables to examine if they were highly correlated with each other; 3) I assess the Independence of Irrelevant Alternatives (IIA) Assumptions to examine whether the five categories of the dependent variable are independent from each other; Finally, 4) I apply multinomial logistic regressions with region fixed effects to estimate the extent to which different types of principal turnover can be explained by principal characteristics, school context, principal instructional leadership practices, and working conditions.

4.1 Summary Statistics

Due to the complex stratification process employed in SASS and PFS, I incorporated the replicate sampling weight in data analysis to obtain less biased estimates. Final weight and 88 replicate weights (AREPWT1-AREPWT88) are incorporated in Table 4.1 and in the mean comparison analysis. Based on these weights, this sample with 6,480 observations can represent a population of 78,160 principals in American public schools. Table 4.1 displays summary statistics for the main variables in this study in SASS 2011-2012 and PFS 2012-2013, including principal turnover, principal characteristics, school context, principal instructional leadership practices, and principal working conditions.

4.1.1 Principal Turnover

The first section of Table 4.1 displays descriptive analysis on the dependent variable, principal turnover. It is a categorical variable, including five categories: stayer, mover, leaver, promoted, and retired. Overall, 77.3% of principals in the 2012-13 year stayed at their current positions in the next year (stayer), 6.7% moved to another school but remained as a principal (mover), 3.7% still worked in a K-12 schools but not as a principal or worked at a job not directly associated with school system or worked at a job outside of K-12 education (leaver), 2.9% of principals got a promotion to a district or administrative office as a superintendent, assistant superintendent or other position (promoted), and 4.3 % of principals retired (retired). In general, a majority of principals stayed at their current positions in the following school year. Among all the principal turnover groups, movers accounted for the largest proportion of principals that made

career transitions.

4.1.2 Principal Characteristics

The second section of Table 4.1 displays descriptive statistics for principal demographic and professional characteristics. For principal demographics, the average age of principals was 48, and 48.3% of principals were male. White principals accounted for 88.4% of all public school principals. In terms of principals' professional characteristics in public schools, according to the Bureau of Labor Statistics, most states require principals to have a master's degree in educational leadership or administration, to be licensed as school administrators, as well as several years of work experience as a teacher (Bureau of Labor Statistics, 2015). Consistently, in this dataset, 98.4% of public school principals had a master's degree or higher, and 97.2 % of them had a license/certificate in school administration. On average, principals had 7.2 years of total administrative experience (including 4.2 years of average administrative experience at the current school), 12.3 years of average teaching experience, and 39.5% of principals had management experience outside of education. Additionally, 56% of public school principals had attended aspiring principal programs before their principalship.

4.1.3 School Context

The third section of Table 4.1 displays descriptive statistics for school contextual characteristics. Elementary schools accounted for 73.8% of all schools, secondary schools accounted for 20.4%, and schools with combined grades accounted for 5.8%.

Charter schools accounted for 3.3% of all public schools. In terms of school urbanicity,[5] 34.4% of principals worked in schools that were located in rural areas, which was the highest proportion among all the urbanicity types; 27.9% worked in schools that were located in suburban areas; 23.8% worked in schools that were located in the city; and 14% worked in schools that were located in towns. The average school enrollment was 585, ranging from 2 to 9,999 and with a standard deviation of 436. It seems that the size of student enrollment in schools varies much across the United States. The average percentage of enrolled students that were approved for the National School Lunch Program (NSLP) in a school was 50.7% (excluded 110 missing school records, accounting for 1.7%), among which 4.5% schools had no NSLP students, 4% had all students that were approved for NSLP. The average proportion of students of color in a school was 42.7%, and the average proportion of teachers of color was much lower, about 14.7%. About half of all the public schools (55.3%) made AYP in the year 2011-12.

4.1.4 Principal Instructional Leadership Practices

The fourth section of Table 4.1 displays descriptive statistics for principals' instructional leadership practices. Fifty-two percent of principals regarded building basic literacy skills (reading, math, writing, speaking) as the most important educational goal, and about 31.4% of principals regarded encouraging academic excellence as the most important educational goal. Five percent of principals regarded preparing students for postsecondary education and promoting occupational skills as the most important goal.

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[5] Definition of NCES's urban-centric locale: https://nces.ed.gov/surveys/ruraled/definitions.asp

All the other categories, including promoting working habits and self-discipline, promoting personal growth, human relations skills, specific moral values, multicultural awareness or understanding, as well as fostering religious or spiritual development were regarded as the most important educational goal by 11.3% of principals.

Principals' time use can reflect principals' emphasis of their leadership practices to some extent. On average, principals spent about 59 hr per week on all school-related activities before, during, and after school, which meant that principals spent about 12 hr per day on all-school related activities. Specifically, the largest proportion of principals' time was spent on school internal administrative tasks, including human resource/personnel issues, regulations, reports, and school budget in school, accounting for an average of 30.4% of their total working time. In addition, the average percentage of principals' time that was spent on curriculum and teaching-related tasks, including teaching, lesson preparation, classroom observations, mentoring teachers, was 26.9%. Moreover, the average percentage of time spent on student interactions, including discipline and academic guidance was 23.1% and the average percentage of time spent on parent interactions was 12.7%.

In terms of principals' instructional leadership practices that were directly interacted with teachers, the frequency and length of principals observing experienced teachers were slightly lower than that for new teachers, which makes sense because new teachers need more mentoring and guidance as well as monitoring of their teaching practices. Additionally, the average number of formal classroom observation conducted prior to an evaluation on a tenured or experienced teacher versus a nontenured or new teacher were 2.3 and 3.5, respectively. Additionally, the average length of the formal

classroom observation that occurred prior to completing an evaluation on a tenured or experienced teacher versus a non-tenured or new teacher were 46.4 and 50.1 min per classroom observation, respectively.

For school programs focused on encouraging school learning culture, on average, 95.6% of schools had programs to acknowledge student achievement (e.g., assemblies, principal list/honor roll, or student of the week/month), 74.2% of schools had an incentive/reward program that encouraged students' academic success (e.g., pizza parties, cash for grades), 70.2% of schools had programs designed to help students prepare for the next grade or college, and 64.1% of schools had programs or activities where students participated in the community during or after normal school hours (e.g., service learning and community service projects).

4.1.5 Working Conditions

The last section of Table 4.1 displays descriptive characteristics of principal working conditions, including principal job benefits, school district conditions and practices, professional development opportunities, school safety, and autonomy on school matters. For principals' job benefits, 46% of principals were holding meet-and-confer or collective bargaining agreements. "Meet-and-confer" discussions are for the purpose of reaching nonlegally-binding agreements, and collective bargaining agreements are legally-binding agreements (SASS Principal Questionnaire, 2011-12), both of which are beneficial in protecting principals' benefits than without them. The average number of days that principals were required to work was 230. The average annual salary for principals was $90,453 with a standard deviation of 21,561, ranging from $20,000 to

$220,000. In addition, school districts vary in terms of benefits that are offered to principals. Only 26.3% of principals were in school districts with a tenure system, and 69.6% of principals had a salary schedule in the school district that allows them to know their salary expectations in the long term and competitiveness of salary by region. Moreover, 2.5% of principals were in districts that used any incentives to recruit principals.

For school district conditions and practices, the average district enrollment was 38,441, with a very large standard deviation (137,789). All principals were rated in formal evaluations during the school year 2011-2012, and 59.6% of their evaluations included student test score outcomes or growth as an evaluation criterion. In terms of the frequency of formal principal evaluations, 71.4% of principals were evaluated every year, 16.5% were evaluated two or more times per year, 9.5% of principals were evaluated once every more than 2 years, and only 2.8% of principals didn't have formal evaluations before. Additionally, as high as 99.5% of principals participated in professional development opportunities in this school year.

In terms of student disciplinary conditions and school safety, the average number of students that were expelled and suspended was 1.6 and 90, respectively. Bullying, physical conflicts, and acts of disrespect for teachers were the three most frequent among all the student disciplinary problems in school. Finally, in terms of principals' decision making autonomy, principals perceived themselves having the highest influence on evaluating teachers (3.9 on a 4.0 Likert Scale), hiring teachers (3.8), setting discipline policies (3.8), and the lowest influence on establishing curriculum (3.1).

4.2 Distribution of Variables Across Principal Groups

In this section, I compared the means of four dimensions of the predictor variables, including principal characteristics, school context, principal instructional leadership practices, and working conditions, across different types of principal turnover groups: the stayers, movers, leavers, promoted, and retired. Detecting the differences in principal characteristics and principal leadership practices in different principal turnover groups could facilitate the understanding of the distribution, characteristics, and behaviors of principals in different turnover groups. In addition, examining the differences in school context and working conditions could descriptively indicate principals' preferences for school conditions across different principal groups. Therefore, the mean comparison of these variables across these principal groups could facilitate the interpretation of the subsequent multinomial logistic regression outcomes. Moreover, given the large number of variables applied in this study, this preliminary step could differentiate the importance of the predictor variables to some extent, which offered a critical perspective when removing less important variables in the subsequent regression analysis.

Since the normality tests of the continuous variables (tested with histogram graphs, pp-plots, qq-plots, Skewness/Kurtosis tests, and Shapiro-Wilk tests) indicated that none of the four dimensions of independent variables were normally distributed, I performed the nonparametric tests—the Kruskal-Wallis test and Chi-square test. I treated each of the four dimensions of variables as a dependent variable and the categorical variable—principal turnover—as a predictor variable, and examined whether there was a significant difference in each variable across the groups of stayers, movers, leavers,

promoted, and retired.

As explained in the methodology section, the Kruskal-Wallis test assesses whether there is a significant difference in a continuous variable by a grouping independent variable. For a categorical variable, such as gender, race, and urbanicity, the Chi-square test of independence was utilized to test whether the variable distributed differently in the form of frequency counts for different principal turnover groups. With either method, the p value smaller than 0.05 means that the distribution of a variable significantly differs across principal turnover groups.

Given the complex weighting technique of the SASS and PFS datasets, unfortunately, the replicate sample weighting technique cannot be applied in the Kruskal Wallis tests. With the inherent limitation of this method, the findings of the mean comparison of the continuous variables across different principal groups can only roughly indicate the differences of means in these variables. The results from the post-hoc tests regarding the differences across principal groups are not reported and are only referred to in this study. The omnibus mean comparison results are shown in Table 4.2. Given the limitation of space, the following paragraphs mostly focused on the variables that showed significant difference across the principal groups.

4.2.1 Principal Characteristics

As the first section of Table 4.2 shows, in terms of principal demographic characteristics, age and gender shows significant difference across the principal groups. Movers had a lower average age (45.8 years old) compared with stayers (47.4 years old). In addition, the proportion of male in the leaver group were 59.0%, which was much

higher than that of stayers (48%). Descriptively, it could mean that male principals were associated with higher rates of changing roles in school or leaving the education system, but further regression analysis required to be conducted to examine whether this pattern exists while holding the other factors constant. Race and whether having a master's degree or higher did not show a significant difference across different principal groups.

For principals' professional experience, setting aside the retired who had more years of experience than other groups, there were still significant differences across these principal groups in terms of years of principals' total administrative experience and administrative experience in their current schools, and years of teaching experience. The leavers and movers had fewer average years of administrative experience (6.2 and 6.3, respectively) than the stayers (7.0) and promoted (7.7). For teaching experience, the movers and promoted both had fewer years of experience (11.3 and 11.0, respectively) than stayers (12.3).

4.2.2 School Context

The second section of Table 4.2 shows school contextual characteristics across different principal groups. In terms of school level, a higher proportion of the promoted were from secondary schools (31.8%) compared with stayers (20.1%). Descriptively, it seems that principals in secondary schools were more likely to get a promotion to the district central office than those in elementary schools. Still, further regression results that hold other characteristics constant were examined in the later regression analysis. Additionally, the stayer and promoted groups of principals were in schools with a larger average school enrollment (591 and 727, respectively) than movers (527) and leavers

(494) in the base year (2011-12). Similarly, stayers and the promoted were also in larger school districts with an average student enrollment of 39,598 and 41,383, respectively, while movers and leavers were much lower (23,068 and 18,150, respectively) in the base year. On the surface, it could mean that the stayers and the promoted were more likely to stay in larger schools and school districts in the base year, compared with the other turnover groups.

In terms of student demographics, the average proportion of students of color (50%) for movers was significantly higher than that of stayers (41%). Additionally, the average proportion of students that were approved for the National School Lunch Program (NSLP) was higher for movers (55.4%) than for stayers (50.6%). These findings indicated some principals' preferences for moving from schools with higher proportions of students of color and low-income students. Moreover, these findings justified the necessity to categorize different types of principal turnover, because the significant difference in these variables was only detected in movers rather than other turnover groups in comparison to stayers.

4.2.3 Principal Instructional Leadership Practices

The third section of Table 4.2 shows the differences across principal turnover groups in terms of principal instructional leadership practices. The average hours that principals spent on interacting with students were significantly higher for the promoted (24.9) than for stayers (22.4). Additionally, the proportion of hours that principals spent on administrative tasks were higher for leavers (33.2%), compared with stayers (31.0%), movers (28.3%), and the promoted (28.5%). The proportion of hours that principals spent

on curriculum and teaching-related tasks were higher for movers (29.5%) than stayers (26.4%). At this point, it is difficult to determine whether principals' task distribution is the innate feature of principals who make these different types of transitions or whether the distribution of these tasks cause them to be unsatisfied with their current time arrangement and then drive them to leave or move to another school.

In terms of school-level programs, the proportion of programs that acknowledged student achievement (e.g., assemblies, principal list/honor roll, or student of the week/month) was significantly lower for movers (91.4%) than for stayers (95.6%), leavers (98.0%), and promoted (95.8%) at the significance level of 0.05. Meanwhile, the average proportion of programs that encouraged students' academic success (e.g., pizza parties, cash for grades) for the leavers (80.0%) was significantly higher than that of stayers (72.7%) at the significance level of 0.1.

4.2.4 Working Conditions

This section displays the findings of working conditions, including principals' job benefits and school safety.

4.2.4.1 Job Benefits

The fourth section of Table 4.2 displays the differences in principal working conditions across different principal groups. The proportion of principals who held a collective bargaining/meet-and-confer contract or had a tenure system showed a significant difference across these groups. Forty-seven percent of stayers and 49% of the promoted had these contracts, compared with movers (44.6%) and leavers (30.3%).

Additionally, 28% of stayers had a tenure system, while 18.7% of movers, 22.6% of the leavers, and 19.6% of the promoted had a tenure system. These findings descriptively reflected the importance of contracting and tenure systems to principal retention. However, the qualification of having these contracts or tenure systems could also be related with principals' professional characteristics such as administrative and teaching experiences as well as their job performances. Therefore, the following regression analysis was applied to further determine the contribution of these job benefits on the likelihood of principal turnover, while holding the other factors constant. In terms of salary, the stayers and the promoted had a significantly higher average salary ($90,745 and $89,493, respectively) compared with movers ($87,213) and leavers ($82,315). Principals that retired had a significantly higher average salary ($96,818) than stayers, but the reason could be related with more years of administrative and teaching experience these principals had.

4.2.4.2 School Safety

For school safety, the number of students that were expelled or suspended showed a significant difference across different turnover groups. For instance, the numbers of expelled and suspended students were the largest in the promoted group compared with others. To further detect this effect, I generated a ratio that was equal to the number of suspended students divided by school enrollment (the number of students who were expelled was not applied in regression models because the value was relatively small with little variation). A further Kruskal-Wallis test also showed that the student suspension ratio was significantly different among different turnover groups: the ratio

was higher for the movers (19.1%) and promoted (15.2%) than stayers (12%). This means that relative to school enrollment, a higher ratio of students on suspension descriptively indicated higher odds of turnover.

In terms of autonomy, principals' influence on determining the content of professional development and budget spending shows a significant difference across different principal groups. Given these values ranging from 3.5-3.7 on a 1-4 Likert scale, these descriptive characteristics alone does not indicate quite valuable information. In the later chapters, I investigated further into this aspect while controlling for other factors.

4.2.5 Summary of Mean Comparisons

To summarize, this section compares the means of four dimensions of the predictor variables, including principal characteristics, school characteristics, principal instructional leadership practices, and working conditions, across different types of principal turnover groups. Some significant differences were detected across the principal status groups. For instance, movers left from school with a higher average proportion of students of color and low-income students than stayers. Additionally, a significantly higher proportion of stayers held collective bargaining/meet-and-confer contracts, a tenure system, and higher salary than the turnover groups.

These mean comparison findings have the following significance to this study. First, these findings justified the necessity to categorize different types of principal turnover, because some significant difference in these variables was only detected in certain principal group rather than others, for example, the difference in the proportion of students of color and low-income students was only significant for movers rather than

other turnover categories when comparing to stayers. Second, these findings described the distributions, characteristics, and preferences of the principals who made different career transitions, which offered a preliminary and comparative standpoint in understanding and interpreting the subsequent multinomial logistic regression analysis. Third, given the large number of variables applied in this study that could undermine statistical power, parsimony, and modeling convergence, these outcomes provided a perspective to understand and differentiate the importance of the predictor variables. Since some variables did not show a significant difference across the principal turnover groups and had less value to this study, I removed the following variables in the subsequent multinomial logistic regression analysis: whether having a masters' degree or higher, whether the principal evaluation is based on student test score, whether a school district has incentives to recruit principals, and whether a district has a salary schedule for principals.

4.3 Factor Analysis

To reduce the large number of items that could engender multicollinearity, I performed Factor Analysis on some highly correlated items in one question from the Principal Questionnaire in SASS to generate composite variables—school safety and autonomy.

In SASS, thirteen items are included in the question about how often the following problems occur at school, including physical conflicts among students, robbery or theft, vandalism, student use of alcohol, student use of illegal drugs, student possession of weapons, physical abuse of teachers, student racial tensions, student bullying, student

verbal abuse of teachers, widespread disorder in classrooms, student acts of disrespect in classrooms, and gang activities. These responses of each item were measured in Likert scales from 1 (happens daily) to 5 (never happens) to reflect the conditions of school safety. The factors that were extracted had eigenvalues greater than one, and factor scores that were generated from factor analysis would be applied in the subsequent analyses. The average inter-item covariance was 0.12, and scale reliability coefficient was 0.83. The Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) was 0.85, meaning the common variance between these items was very high. All these parameters indicated that this composite variable, school safety, was a good measurement for the frequency of student disciplinary problems that occurred at school.

Principal autonomy is also one of the important variables of interest. The SASS asks principals about their perceptions of influence on school-level decisions on seven domains: setting performance standards for students, establishing curriculum, determining the content of in-service professional development programs for teachers, evaluating teachers, hiring new full-time teachers, setting discipline policies, and deciding how the school budget will be spent. Each response in these items is measured in Likert scales from 1 (no influence) to 4 (major influence), and "not applicable" option. The response of "not applicable" is recoded to 1 (no influence) on the assumption that principals did not make decisions on this domain and also for the convenience of result interpretation in the later chapters. Furthermore, I utilized Factor Analysis to generate a composite variable: autonomy, representing principal influence on the above seven domains. The average inter-item covariance was 0.07, and scale reliability coefficient was 0.61. The Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) was 0.70,

which was higher than 0.5. All these parameters indicated that this composite variable, autonomy, was a proper measurement for principals' perceptions of influence on school decision making.

4.4 Multicollinearity and Correlations of the Independent Variables

Before conducting the multinomial logistic regression analysis, I assessed the multicollinearity between predictor variables. The mean VIF was 1.47 and the maximum VIF of the variables was 2.73, which was smaller than 5. These results indicated no obvious multicollinearity between the independent variables.

Next I examined the correlation coefficients between independent variables. Most of the independent variables were weakly correlated except for two variables. The correlation between principals' total years of administrative experience and their years of administrative experience at their current schools was 0.68. Since this study applied a cross-sectional design instead of longitudinal, this innate weakness could be mitigated to some degree by controlling for years of administrative experience at their current schools when examining the contribution of factors to principal turnover in the following year. Therefore, I kept the latter variable in the subsequent multinomial logistic regression analysis.

Another relatively high correlation coefficient was between the proportion of minority students and the proportion of minority teachers—the correlation coefficient of was 0.64. These two variables reflected the characteristics of students and teachers respectively and both could have an influence on the probability of principal turnover. In order to avoid the high correlation problem and be able to compare with previous

literature, I divided the proportion of students of color into quartile groups and then combined the four quartiles into three subgroups of minority students: the proportion of students of color in a school smaller than 25%, between 25% and 75%, and larger than 75%.

4.5 Independence of Irrelevant Alternatives tests (IIA)

After checking for the multicollinearity and correlation coefficients between the predictor variables, I assessed the assumption of the Independence of Irrelevant Alternatives (IIA) before conducting the multinomial logistic regressions. As Table 4.3 shows, the p values from the Hausman-McFadden tests were either larger than 0.05 or negative, indicating that the IIA assumptions were not violated. Therefore, these principal turnover groups, including mover, leaver, the promoted, and the retired were independent from each other at the significance level of 0.05, and it is appropriate to perform the multinomial logistic regressions on this sample.

4.6 Multinomial Logistic Regressions of Principal Turnover

In this section, I estimated the extent to which different types of principal turnover can be explained by principal characteristics, school context, principal instructional leadership practices, and working conditions with multinomial logistic regressions with region fixed effects. The dependent variable is principal turnover, a categorical variable that represents five types of principal statuses: remaining as a principal at the same school (stayer), moving to another school but still as a principal (mover), changing roles to become a teacher or staff or leaving the education system (leaver), getting a promotion to

the district central office (promoted), and retired (retired).

Six main sets of multinomial logistic regression models were estimated. Model 1 only includes principal characteristics. For Model 2, I examined how school contextual factors influence principal turnover. In Model 3, I examined both principal characteristics and school context. In Model 4, I added principal instructional leadership practices to Model 3. In Models 5, 6, and 7, I examined how principal working conditions were associated with the probability of different types of principal turnover, while controlling for principal characteristics and school context. In Model 8, I included all the predictor variables and examined the magnitude of each variable on the likelihood of different types of principal turnover. These results of these models were reported in Table 4.4-4.11.

Note that the unweighted sample sizes in some principal turnover groups were relatively small. For instance, compared with 5,170 stayers, there were only 430 movers, 230 leavers, 230 promoted, and 280 retired. When the models were run with replicate weights, they could not converge, possibly due to the small sample sizes in some groups and the large number of predictor variables applied in this study. To solve this problem but still account for sampling weights in SASS, I applied “final sampling weight” to the SASS datasets instead. The impacts of weighting on modeling were similar with both methods and a number of research has utilized final weight on SASS datasets (e.g., Grissom, 2011; Sun & Ni, 2015).

4.6.1 The Influence of Principal Characteristics

Table 4.4 reports how principal demographic and professional characteristics influence the Relative Risk Ratios (RRR) of different principal turnover groups (Model 1) compared with stayers.

4.6.1.1 Principal Demographics

In terms of age, young (age < 40) and middle-aged (between 40 and 55) principals were significantly less likely to retire compared with those who were older than 55, which makes sense because the typical retirement age of principals is about 65[6] years old. Middle-aged principals (between 40 and 55) were almost 82% times more likely to move to another school compared with older principals. This is consistent with the descriptive finding in Table 4.2 that movers had a lower average age than stayers. In addition, male principals were 60% times more likely to change roles in school or leave the education system to pursue another career than female. This finding is also consistent with the descriptive finding in Table 4.4 that the proportion of male in the leavers was significantly higher than that in the stayers.

4.6.1.2 Principal Professional Experiences

Principals' administrative experience at their current schools and whether they had management experience outside of education had no significant influence on the probability of different types of principal turnover. However, more years of teaching experience was associated with lower odds of getting a promotion to the district central

[6] https://www.ssa.gov/planners/retire/retirechart.html

office, while holding all the other principal characteristics constant. Previous descriptive findings in Table 4.2 also suggested that the promoted had fewer total years of teaching experience than stayers.

Principals that attended aspiring principal programs were 38% less likely to change roles or leave the education system and 25% less likely move to the district central office. In addition, principals that had a license or certificate in school administration were 55.5% less likely to change roles in schools or leave the education system.

4.6.2 The Influence of School Contextual Characteristics

Table 4.5 shows how school contextual factors, including school context and student demographics, influence the probability of different types of principal turnover (Model 2).

4.6.2.1 School Context

Compared with elementary school principals, those in the secondary schools were about 45% times more likely to move to another school, 42% times more likely to change roles in school or leave the educations system, and 78% more likely to get promoted to the district central office. Additionally, principals in the schools with combined grades were 62% times more likely to change roles in school or leave the education system, and 1.7 times more likely to get a promotion to the district central office. In terms of urbanicity, principals in schools that were located in rural areas were less likely to move to another school than those in the city at the significance level of 0.1.

Principals in charter schools were 89% times more likely to retire compared with those in traditional public schools (TPS). Descriptively, the average age of principals in charter schools was 48 with a standard deviation of 8.9, and that of TPS was 46 with a standard deviation of 11.8. Specifically, 34% of principals in charter schools were younger than 40 compared with 19.6% in TPS, 41.0% of principals in charter schools were between 40 and 55 compared with 53.7% in TPS, and 4% of principals were older than 65 in charter schools compared with 2.1% in TPS. Based on these above statistics, it seems that charter schools tend to have a larger number of younger and older principals than TPS, which could partly explain the higher possibility of retirement for principals in charter schools.

Principals who were in schools with a larger school enrollment were slightly less likely to move to another school, change roles in school or leave the education system, and more likely to get promoted to the district central office. However, principals in larger school districts were slightly more likely to move to another school, while holding all the other school factors constant.

4.6.2.2 Student Demographics

Principals in schools that made Adequate Yearly Progress (AYP) were 28% less likely to move to another school. Moreover, principals in schools with the highest quartile of students of color were twice as likely to transfer to another school than the lowest quartile. It also confirms the previous descriptive findings in Table 4.2 that movers left from schools with a significantly higher proportion of students of color compared with stayers. However, the proportion of students that were approved for the

National School Lunch Program (NSLP) did not show a significant influence on the likelihood of different types of principal turnover. Principals in schools with a higher ratio of students per FTE teacher were slightly more likely to get promoted to the district central office. This finding could be associated with the higher probability of getting a promotion to district central office in schools with a larger enrollment.

4.6.2.3 Model with Principal Characteristics and School Context

Table 4.6 shows how principal and school characteristics altogether influence the odds of different types of principal turnover (Model 3). Compared with Model 1, most coefficients of the variables in Model 3 were similar except that principals' race became statistically significant for the leavers and retired. It means that while controlling for both principal and school characteristics, principals of color were more likely to change roles in school or leave the education system and less likely to retire. Compared with Model 2, when adding principal characteristics in Model 3 the coefficients for secondary and combined school became insignificant for leavers. It could be speculated that principals' race accounted for some variance in the effect of school level on the probability of principal turnover. In other words, the effect of principals' race on principal turnover may be moderated by school level to some extent.

4.6.3 The Influence of Principal Instructional Leadership Practices

Table 4.7 shows the influence of principal instructional leadership practices on the probability of principal turnover while controlling for principal and school characteristics (Model 4). Principals whose most important educational goal was encouraging academic

excellence were significantly less likely to move to another school, while holding the other variables constant. It could be speculated that principals who are highly focused on enhancing student academic performance may be more devoted to the principalship and student success, thus less likely to move to another school.

Principals who spent a higher percentage of time on internal administrative tasks, including human resource/personnel issues, regulations, reports, and school budget were slightly more likely to change roles in school or leave the education system at the significance level of 0.1. Interestingly, principals who spent a higher proportion of time on curriculum and teaching-related tasks, including teaching, lesson preparation, classroom observations, mentoring teachers were more likely to move to another school (significance level=0.05) or get a promotion to the district central office (significance level=0.1).

Finally, principals who were in schools with programs that acknowledged student achievement (e.g., assemblies, principal list/honor roll, or student of the week/month) were 67% less likely to move to another school at the significance level of 0.01. Since these school-level programs were most likely to be initiated and guided by school principals, principals who made efforts to improve student academic achievement might be more committed to school success, thus less likely to move to another school and start over with the school improvement efforts.

To sum up, principals who were highly focused on enhancing student academic performance and programs excellence were less likely to move to another school. In terms of proportion of time spending on school matters, principals who spent a higher percentage of time on internal administrative tasks were slightly more likely to change

roles in school or leave the education system. Principals who spent a higher proportion of time on curriculum and teaching-related tasks were more likely to move to another school or get a promotion to the district central office.

4.6.4 The Influence of Working Conditions

This section examines how factors of working conditions influence the probability of different types of principal over. These factors are categorized into the following dimensions: contract, tenure system, and professional development; student disciplinary problems and school safety; principal autonomy; and salary.

4.6.4.1 Contract, Tenure System, and Professional Development

Table 4.8 shows the results of Model 5 that examines the influence of principals' working conditions on the likelihood of principal turnover, while controlling for principal characteristics and school contextual factors. For job benefits, principals who were represented under a meet-and-confer agreement or a collective bargaining agreement were about 50% less likely to change roles in school or leave the education system at the significance level of 0.01. Additionally, principals who worked in a district with a principal tenure system were slightly less likely to move to another school or retire. In terms of professional development, principals who participated in any professional development activities related to their role as a principal during the year 2011-12 were less likely to move to another school and much more likely to get a promotion to the district central office, while controlling for all other factors.

In conclusion, principals who have some job nonpecuniary benefits such as

beneficial job contracts, tenure systems, and professional development opportunities were less likely to move to another school and change roles in school or leave the education system.

4.6.4.2 Student Disciplinary Problems

School safety and student discipline are critical concerns for principals, but have been rarely studied. As Table 4.8 shows, principals in schools with a larger student suspension ratio or a higher frequency of school problems were significantly more likely to move to another school. Consistent with the descriptive findings in Table 4.2, the student suspension ratio was also higher for movers than the other turnover groups. In terms of student discipline, principals in schools with a higher frequency of student disciplinary problems were significantly more likely to get a promotion to the district central office, while holding all the other factors constant.

4.6.4.3 Principal Autonomy

Since the composite variable—principal autonomy over school-level decisions—did not show a significant influence on the probability of principal turnover, I created Model 6 that utilized original variables of principal influence on seven domains (setting performance standards for students, establishing curriculum, determining the content of in-service professional development programs for teachers, evaluating teachers, hiring new full-time teachers, setting discipline policies, and deciding budget spending in school), while holding principal characteristics, school context, and other principal working conditions constant (Table 4.9). As Table 4.9 shows, only one coefficient of

principal autonomy—the influence on evaluating teachers—was significant for leavers. This means that principals having more influence over evaluating teachers were less likely to change roles in school or leave the education system.

4.6.4.4 Salary

Given the significant difference in principal salary across principal turnover groups as shown in Table 4.2, it was surprising to find that in Model 5 principals' annual salary did not have a significant impact on principal turnover except for those who retired. Previous literature suggested that higher principal salaries are often associated with lower principal turnover rates (Akiba & Reichardt, 2004; Baker et al., 2010; Papa et al., 2002; Papa Jr., 2007; Pijanowski & Brandy, 2009). Suspecting that factors of nonpecuniary working conditions could moderate the effect of salary on the likelihood of principal turnover to a certain extent, I created Model 7 (shown in Table 4.10) which examined how principal salary alone influences the probability of different types of principal turnover, while only controlling for principal characteristics and school context.

As Table 4.10 shows, the increase of one unit of principals' logarithmic salary lowered the probability of principals moving to another school by about 50% at the significance level of 0.1, and lowered the probability of principals changing roles in school or leaving the education system by about 70%, while holding principal characteristics and school context constant. However, adding any other variables of working conditions or even the region fixed effects could eliminate the significant effect of salary on principal turnover. It seems that salary alone is an important factor influencing principal turnover, but when accounting for other nonpecuniary working

conditions and regional effects, the effect of salary on principal turnover was moderated by these factors to some degree.

To summarize this section of working conditions, higher principal salary and nonpecuniary working conditions, including being represented under a meet-and-confer/collective-bargaining agreement, having a principal tenure system, participating in principal professional development opportunities, having a lower proportion of students on suspension, and less frequent student disciplinary problems, as well as having adequate influence on evaluating teachers, could decrease the odds of principals moving to another school or changing roles in school/leaving the education system, while controlling for principal characteristics and school context.

4.6.5 Full Model

Table 4.11 shows the results of Model 8 that includes all predictor variables. Most of the results were similar to Model 5 in Table 4.8 (influence of working conditions on principal turnover), except that the variable—proportion of principals' time spending on administrative tasks—became not statistically significant for leavers. It seems that working conditions mitigated the impact of time spending on school-level administrative tasks on principal turnover to some extent. In other words, principals with better working conditions were not significantly more likely to change roles or leave the education system when facing higher percentage of administrative tasks. However, this finding only weakly implied the above relationship, and further empirical research remains to be conducted.

In each multinomial logistic regression model, region was accounted for as fixed

effects. As Model 1 in Table 4.4 shows, compared with principals in the Northeast, principals in the Midwest were more likely to move to another school, principals in the South were more likely to move, leave, or get promoted, and principals in the West were more likely change roles in school or leave the education system, while controlling for principal characteristics. But these regional fixed effects were diminished when adding the other sets of variables. It could be speculated that the effects of geographic region on the likelihood of principal turnover may be moderated by the factors of school context, principal instructional leadership practices, and working conditions to some extent.

Compared across the multinomial logistic regression models, the Pseudo R-squared of Model 1 is 7.5%. The Pseudo R-squared in Model 2 is 2.8%, which is lower than Model 1. This means that principal characteristics had a stronger influence in predicting principal turnover than school contextual factors. Model 3 including all principal and school characteristics as independent variables predicts a better outcome, with Pseudo R-squared equals to 9.6%. Model 4 adds principal instructional leadership practices to Model 3 and Model 5 adds principal working conditions to Model 3; the Pseudo R-squared for these two models are 10.8% and 12.5%, respectively. The final model with all the four dimensions of variables has a Pseudo R-squared of 13.2%. According to McFadden (1977), McFadden's Pseudo R-squared ranging from 0.2 to 0.4 represents excellent fit of the model. The full model of this study indicates moderate fit of the variables in predicting the probability of principal turnover.

Table 4.1

Descriptive Analysis

Variable	Obs	Mean	Std. Dev.	Min	Max
Principal turnover					
Stayer	6590	0.773	0.419	0	1
Mover	6590	0.067	0.250	0	1
Leaver	6590	0.037	0.189	0	1
Promoted	6590	0.029	0.167	0	1
Retired	6590	0.043	0.203	0	1
Principal characteristics					
Age	6590	48	8.959	23	80
Male	6590	0.483	0.500	0	1
White	6590	0.884	0.320	0	1
Master degree	6590	0.984	0.125	0	1
Principal experience	6590	7.194	6.345	0	45
Principal experience-this school	6590	4.236	4.469	0	45
Teaching experience	6590	12.286	6.748	0	43
Management experience	6590	0.395	0.489	0	1
Aspiring program	6590	0.560	0.496	0	1
Certificate	6590	0.972	0.166	0	1
School context					
Elementary	6590	0.738	0.439	0	1
Secondary	6590	0.204	0.403	0	1
Combined	6590	0.058	0.234	0	1
City	6590	0.238	0.426	0	1
Suburb	6590	0.279	0.448	0	1
Town	6590	0.140	0.347	0	1
Rural	6590	0.344	0.475	0	1
Charter	6590	0.033	0.179	0	1
Enrollment	6590	585	435.970	2	9999
District enrollment	6590	38441	137789.000	2	1032013
AYP	6590	0.553	0.497	0	1
% Minority student	6590	42.703	33.772	0	100
%NSLP	6480	50.737	28.665	0	100
Student/teacher ratio	6590	15.116	4.718	0.9588	49.6522
% Minority teachers	6590	14.731	22.193	0	100
Principal leadership practices					
Goal basic	6590	0.516	0.500	0	1
Goal excel	6590	0.314	0.464	0	1
Goal post	6590	0.054	0.227	0	1
Goal value	6590	0.113	0.317	0	1
Hours school activities	6590	58.974	12.816	1	168
Hours interact student	6590	22.861	13.928	0	150
% admin task	6590	30.429	16.412	0	97

Table 4.1 (cont.)

Variable	Obs	Mean	Std. Dev.	Min	Max
% task on curriculum	6590	26.892	13.546	0	100
% task on student	6590	23.146	13.110	0	90
% task on parent	6590	12.715	7.098	0	70
Freq observe exp teachers	6590	2.297	2.868	0	50
Freq observe new teachers	6590	3.468	3.168	0	50
Length observe exp teachers	6590	46.406	23.406	0	440
Length observe new teachers	6590	50.136	28.362	0	550
Programs-community	6590	0.641	0.480	0	1
Programs-achieve	6590	0.956	0.204	0	1
Programs-award	6590	0.742	0.438	0	1
Programs-college	6590	0.702	0.457	0	1
Working conditions					
Contract type	6590	0.460	0.498	0	1
Days require	6590	230	33.766	108	365
Salary	6590	90453	21560.680	20000	220000
Principal evaluation	6590	1.000	0.000	0	1
Two or more times per year		0.1654			
Once a year		0.7136			
Once every 2 or more years		0.0514			
Once every 3 years	6590	0.0381	1.076	1	7
Once every 4 years		0.0011			
Once every 5 years		0.0044			
No formal evaluation		0.0259			
Principal evaluation on test	6040	0.596	0.491	0	1
Tenure system	5810	0.263	0.440	0	1
Hiring incentives	5810	0.025	0.155	0	1
Salary schedule	5370	0.696	0.460	0	1
PD	6590	0.995	0.071	0	1
Student Expelled	6590	1.617	11.224	0	545
Student suspended	6590	89.522	235.730	0	5338
Student disciplinary problems					
Physical conflicts	6590	3.537	0.819	1	5
Robbery or theft	6590	4.023	0.570	1	5
Vandalism	6590	4.117	0.533	1	5
Use of alcohol	6590	4.677	0.531	1	5
Use of illegal drugs	6590	4.599	0.600	1	5
Possession of weapons	6590	4.567	0.503	1	5
Physical abuse of teachers	6590	4.780	0.441	2	5
Student racial tensions	6590	4.513	0.567	1	5
Student bullying	6590	3.361	0.895	1	5
Verbal abuse of teachers	6590	4.114	0.767	1	5
Disorder in classroom	6590	4.684	0.576	1	5
Disrespect for teachers	6590	3.728	0.870	1	5
Gang activities	6590	4.793	0.472	1	5

Table 4.1 (cont.)

Variable	Obs	Mean	Std. Dev.	Min	Max
Autonomy					
Set standards	6590	3.608	0.728	1	4
Establish curriculum	6590	3.108	0.890	1	4
Determine PD	6590	3.611	0.636	1	4
Evaluate teacher	6590	3.933	0.371	1	4
Hire teacher	6590	3.792	0.574	1	4
Set discipline	6590	3.776	0.500	1	4
Budget	6590	3.551	0.687	1	4

Estimates adjusted using SASS probability weights. Sample sizes rounded due to NCES nondisclosure rules.

Table 4.2

Mean Comparison of Variables

	Stayer	Mover	Leaver	Promoted	Retired	P value
Principal characteristics						
Age	47.444	45.774	47.428	47.418	59.306	0.000
Male	0.483	0.480	0.590	0.521	0.398	0.033
White	0.892	0.866	0.846	0.927	0.921	0.195
Master degree	0.983	0.985	0.968	1.000	0.995	0.326
Principal experience	6.973	6.345	6.157	7.651	12.567	0.000
Principal exp this school	4.161	3.835	3.649	4.165	7.106	0.000
Teaching experience	12.265	11.347	12.013	11.040	16.287	0.000
Management exp	0.393	0.423	0.454	0.376	0.333	0.287
Aspiring program	0.561	0.605	0.464	0.483	0.531	0.072
License/Certificate	0.973	0.965	0.933	0.981	0.974	0.223
School context						
Elementary	0.744	0.736	0.686	0.584	0.759	0.001
Secondary	0.201	0.205	0.223	0.318	0.199	0.012
Combined	0.055	0.059	0.091	0.099	0.043	0.089
City	0.231	0.293	0.170	0.214	0.263	0.223
Suburb	0.279	0.284	0.205	0.224	0.340	0.131
Town	0.143	0.127	0.168	0.159	0.094	0.219
Rural	0.347	0.295	0.458	0.402	0.303	0.015
Charter	0.029	0.030	0.061	0.010	0.056	0.250
Enrollment	591	527	494	727	589	0.000
District enrollment	39598	23068	18150	41383	51353	0.000
AYP	0.562	0.470	0.577	0.577	0.534	0.126
% Minority student	41.238	50.318	41.470	40.440	42.748	0.000
%FRL	50.001	54.279	50.572	50.669	50.330	0.000
Student teacher ratio	15.105	15.179	14.865	15.589	14.910	0.000
% Minority teacher	13.899	17.926	15.236	12.108	13.906	0.001
Instructional leadership practices						
Goal (basic)	0.516	0.532	0.522	0.420	0.586	0.167
Goal (excel)	0.316	0.255	0.315	0.369	0.300	0.213
Hours (school activities)	58.430	59.522	59.139	58.532	58.658	0.146
Hours (interact students)	22.399	23.967	22.215	24.929	22.149	0.001
% admin task	30.990	28.296	33.176	28.485	32.189	0.018
% task on curriculum	26.368	29.458	26.525	28.416	26.992	0.043
% task on student	23.083	24.337	22.275	23.779	22.649	0.402
% task on parent	12.805	12.941	12.545	12.657	12.405	0.787
Freq observe exp tch	2.255	2.557	2.054	2.331	2.369	0.041
Freq observe new tch	3.404	3.561	3.143	3.635	3.615	0.314
Length obs exp tch	45.668	45.748	46.769	48.225	48.096	0.188
Length obs new tch	49.519	49.394	51.394	54.001	50.322	0.156
Program-community	0.636	0.590	0.656	0.668	0.611	0.622

Table 4.2 (cont.)

	Stayer	Mover	Leaver	Promoted	Retired	P value
Program-achieve	0.956	0.914	0.980	0.958	0.965	0.012
Program-award	0.727	0.761	0.799	0.718	0.666	0.094
Program-college	0.688	0.700	0.728	0.779	0.658	0.280
Working conditions						
Contract type	0.470	0.446	0.303	0.490	0.448	0.004
Days require	231	230	228	228	227	0.226
Salary	90745	87213	82315	89493	96819	0.000
Prin Eval on Score	0.589	0.631	0.566	0.652	0.605	0.799
Tenure system	0.280	0.187	0.226	0.196	0.236	0.010
Incentive to recruit	0.022	0.048	0.024	0.018	0.023	0.272
Salary schedule	0.690	0.719	0.618	0.747	0.767	0.175
PD	0.996	0.990	0.985	1.000	0.986	0.005
Student expelled	1.438	1.598	1.550	2.153	4.855	0.013
Student suspended	87	121	57	128	106	0.000
Suspension ratio	0.120	0.191	0.101	0.152	0.138	0.000
Set standards	3.610	3.735	3.599	3.603	3.464	0.542
Establish curriculum	3.115	3.146	3.103	3.165	3.034	0.965
Determine PD	3.617	3.623	3.553	3.648	3.518	0.023
Evaluate teacher	3.931	3.958	3.828	3.947	3.974	0.123
Hire teacher	3.797	3.711	3.773	3.836	3.799	0.318
Set discipline	3.778	3.798	3.724	3.728	3.774	0.146
Decide budget	3.550	3.536	3.413	3.619	3.564	0.046

Estimates adjusted using SASS probability weights. Sample sizes rounded due to NCES nondisclosure rules.

Table 4.3

IIA tests

Omitted	Chi2	DF	P>Chi2	Evidence
Mover	-1.5	4	<0	for H0
Leaver	-0.36	3	<0	for H0
Promoted	4.71	122	1	for H0
Retired	0.2	3	0.98	for H0

Notes:

1. If chi2 < 0, the estimated model fails to meet the asymptotic assumptions of Hausman test;
2. Ho: differences in coefficients are not systematic.

Table 4.4

Model 1 Principal Characteristics Influence on Principal Turnover

	Mover	Leaver	Promoted	Retired
Variable	Relative Risk Ratio (RRR) and standard errors (SE)			
Young (<40)	1.536	0.935	0.701	0.022***
	(0.418)	(0.322)	(0.255)	(0.016)
Mid-career (40-55)	1.816***	0.689	1.052	0.055***
	(0.379)	(0.179)	(0.289)	(0.015)
Male	0.965	1.593**	1.144	0.942
	(0.150)	(0.308)	(0.221)	(0.164)
White	0.823	0.676	1.596	1.523
	(0.167)	(0.199)	(0.472)	(0.491)
Principal experience-this school	1.000	0.969	0.993	1.021
	(0.018)	(0.023)	(0.019)	(0.014)
Teaching experience	0.986	1.002	0.960***	1.005
	(0.012)	(0.019)	(0.013)	(0.013)
Management experience	1.105	1.236	0.897	0.754
	(0.165)	(0.273)	(0.171)	(0.138)
Aspiring program	1.147	0.620**	0.715*	0.933
	(0.173)	(0.127)	(0.134)	(0.173)
License/certificate	0.809	0.445*	1.355	0.779
	(0.305)	(0.190)	(0.751)	(0.462)
Midwest	1.556*	1.129	0.880	0.796
	(0.356)	(0.339)	(0.273)	(0.207)
South	1.666**	1.874**	1.858**	1.104
	(0.381)	(0.518)	(0.564)	(0.285)
West	1.539	1.787*	1.162	0.857
	(0.425)	(0.565)	(0.377)	(0.253)
Pseudo R-squared	0.075			
N	6340			

Notes:

1. Estimates adjusted using SASS probability weights. Sample sizes rounded due to NCES nondisclosure rules.
2. * p<0.1, ** p<0.05, *** p<0.01

Table 4.5

Model 2 School Context Influence on Principal Turnover

	Mover	Leaver	Promoted	Retired
Variable	Relative Risk Ratio (RRR) and standard errors (SE)			
Secondary	1.452**	1.416*	1.784**	1.097
	(0.258)	(0.289)	(0.403)	(0.194)
Combined	1.274	1.620*	2.658**	0.810
	(0.343)	(0.452)	(1.188)	(0.294)
Suburb	0.937	1.115	0.843	1.079
	(0.199)	(0.411)	(0.220)	(0.288)
Town	0.682	1.536	1.096	0.573*
	(0.164)	(0.602)	(0.318)	(0.182)
Rural	0.674*	1.629	1.018	0.747
	(0.144)	(0.556)	(0.258)	(0.198)
Charter school	0.618	1.886	0.349	2.038*
	(0.232)	(0.730)	(0.249)	(0.801)
School enrollment	0.999***	0.999**	1.000*	1.000
	(0.000)	(0.000)	(0.000)	(0.000)
District enrollment	1.000**	1.000	1.000	1.000
	(0.000)	(0.000)	(0.000)	(0.000)
AYP	0.718**	0.955	1.142	0.883
	(0.118)	(0.207)	(0.241)	(0.154)
Mid %min student	1.238	1.084	0.937	1.032
	(0.238)	(0.244)	(0.223)	(0.213)
High %min student	2.082**	1.045	0.721	1.004
	(0.597)	(0.339)	(0.247)	(0.315)
% NSLP	0.998	0.997	1.005	1.000
	(0.003)	(0.004)	(0.004)	(0.003)
Student teacher ratio	1.016	1.011	1.037*	1.004
	(0.027)	(0.032)	(0.019)	(0.023)
% minority teacher	1.002	1.007	0.993	0.994
	(0.005)	(0.005)	(0.006)	(0.006)
Midwest	1.488	0.917	0.747	0.692
	(0.364)	(0.276)	(0.254)	(0.201)
South	1.561*	1.442	1.582	1.180
	(0.417)	(0.421)	(0.506)	(0.353)
West	1.192	1.316	0.891	0.718
	(0.390)	(0.445)	(0.340)	(0.270)
Pseudo R-squared	0.028			
N	6230			

Estimates adjusted using SASS probability weights. Sample sizes rounded due to NCES nondisclosure rules.

* p<0.1, ** p<0.05, *** p<0.01

Table 4.6

Model 3 Principal and School Characteristics Influence on Principal Turnover

	Mover	Leaver	Promoted	Retired
Variable	Relative Risk Ratio (RRR) and standard errors (SE)			
Young (<40)	1.560	0.883	0.790	0.022***
	(0.432)	(0.302)	(0.305)	(0.015)
Mid-career (40-55)	1.829***	0.682	1.151	0.057***
	(0.380)	(0.180)	(0.330)	(0.015)
Male	1.030	1.508*	0.885	0.973
	(0.162)	(0.324)	(0.170)	(0.174)
White	1.149	0.604*	1.273	1.871*
	(0.285)	(0.164)	(0.408)	(0.651)
Principal experience-this school	1.010	0.964	0.992	1.032**
	(0.018)	(0.023)	(0.021)	(0.015)
Teaching experience	0.989	0.994	0.958***	1.006
	(0.012)	(0.018)	(0.015)	(0.013)
Management experience	1.129	1.192	0.858	0.773
	(0.168)	(0.264)	(0.162)	(0.149)
Aspiring program	1.182	0.660**	0.729*	0.907
	(0.177)	(0.137)	(0.135)	(0.172)
License/certificate	0.780	0.444	0.900	0.995
	(0.322)	(0.238)	(0.523)	(0.602)
Secondary	1.444**	1.232	1.771***	1.146
	(0.269)	(0.262)	(0.382)	(0.222)
Combined	1.298	1.430	2.737**	0.776
	(0.354)	(0.409)	(1.176)	(0.301)
Suburb	0.927	1.152	0.834	1.009
	(0.198)	(0.426)	(0.219)	(0.279)
Town	0.694	1.576	1.116	0.468**
	(0.169)	(0.623)	(0.333)	(0.155)
Rural	0.682*	1.611	1.019	0.709
	(0.149)	(0.556)	(0.262)	(0.196)
Charter school	0.557	1.164	0.322	2.854**
	(0.221)	(0.558)	(0.232)	(1.321)
School enrollment	0.999***	0.999**	1.000*	1.000
	(0.000)	(0.000)	(0.000)	(0.000)
District enrollment	1.000**	1.000	1.000	1.000
	(0.000)	(0.000)	(0.000)	(0.000)
AYP	0.718**	1.000	1.142	0.766
	(0.119)	(0.218)	(0.235)	(0.146)
Mid %min student	1.249	1.061	0.953	1.054
	(0.243)	(0.243)	(0.227)	(0.236)

Table 4.6 (cont.)

	Mover	Leaver	Promoted	Retired
High %min student	2.135***	1.043	0.739	1.046
	(0.606)	(0.338)	(0.259)	(0.362)
% NSLP	0.998	0.996	1.005	1.002
	(0.003)	(0.004)	(0.004)	(0.004)
Student teacher ratio	1.015	1.012	1.037*	1.014
	(0.026)	(0.032)	(0.020)	(0.025)
% minority teacher	1.002	1.004	0.993	0.999
	(0.005)	(0.005)	(0.006)	(0.006)
Midwest	1.413	0.908	0.763	0.846
	(0.346)	(0.280)	(0.259)	(0.260)
South	1.521	1.609	1.696	1.167
	(0.409)	(0.487)	(0.555)	(0.362)
West	1.130	1.455	0.896	0.762
	(0.365)	(0.476)	(0.351)	(0.305)
Pseudo R-squared	0.096			
N	6230			

Notes:

1. Estimates adjusted using SASS probability weights. Sample sizes rounded due to NCES nondisclosure rules.
2. $p<0.1$, ** $p<0.05$, *** $p<0.01$

Table 4.7

Model 4 Instructional Leadership Practices Influence on Principal Turnover

	Mover	Leaver	Promoted	Retired
Variable	Relative Risk Ratio (RRR) and standard errors (SE)			
Goal basic	0.774	1.190	0.776	1.404
	(0.150)	(0.288)	(0.193)	(0.376)
Goal excel	0.613**	1.129	1.026	1.115
	(0.130)	(0.300)	(0.250)	(0.313)
Hours interact student	1.003	0.998	1.006	1.000
	(0.005)	(0.008)	(0.006)	(0.007)
% admin task	0.995	1.012*	0.994	1.000
	(0.005)	(0.006)	(0.006)	(0.006)
% task on curriculum	1.011**	1.008	1.011*	1.001
	(0.005)	(0.009)	(0.006)	(0.007)
Observe teachers	1.000	1.000	1.000	1.000
	(0.000)	(0.000)	(0.000)	(0.000)
Programs-community	0.835	1.118	0.873	1.108
	(0.125)	(0.261)	(0.208)	(0.238)
Programs-achieve	0.332***	1.777	0.763	2.252*
	(0.102)	(1.130)	(0.452)	(1.100)
Programs-award	1.203	1.382	0.939	0.624**
	(0.214)	(0.370)	(0.246)	(0.131)
Programs-college	1.082	1.051	1.366	0.937
	(0.187)	(0.266)	(0.350)	(0.199)
Midwest	1.425	0.879	0.763	0.866
	(0.346)	(0.271)	(0.260)	(0.265)
South	1.518	1.508	1.588	1.191
	(0.409)	(0.469)	(0.517)	(0.372)
West	1.121	1.404	0.894	0.755
	(0.345)	(0.477)	(0.344)	(0.302)
Pseudo R-squared	0.108			
N	6230			

Notes:

1. Estimates adjusted using SASS probability weights. Sample sizes rounded due to NCES nondisclosure rules.
2. Principal characteristics and school contextual factors are included in the model, but not reported in this table.
3. * p<0.1, ** p<0.05, *** p<0.01

Table 4.8

Model 5 Working Conditions Influence on Principal Turnover

	Mover	Leaver	Promoted	Retired
Variable	Relative Risk Ratio (RRR) and standard errors (SE)			
Contract type	1.071	0.507***	1.373	0.879
	(0.177)	(0.117)	(0.328)	(0.194)
Contract days	1.000	0.999	0.994*	0.997
	(0.002)	(0.003)	(0.003)	(0.003)
Log(salary)	0.763	0.469	0.821	2.909*
	(0.335)	(0.335)	(0.422)	(1.741)
Principal evaluation-score	1.022	0.615	1.177	0.997
	(0.267)	(0.242)	(0.415)	(0.352)
Tenure system	0.689*	0.914	0.658	0.555**
	(0.142)	(0.273)	(0.174)	(0.139)
PD	0.220**	0.605	-	0.499
	(0.137)	(0.484)	-	(0.610)
Suspension ratio	1.390**	0.473	1.226	1.327
	(0.215)	(0.268)	(0.287)	(0.358)
Safety	0.650***	1.024	0.764**	0.901
	(0.064)	(0.150)	(0.092)	(0.109)
Autonomy	1.044	0.831	1.041	0.911
	(0.116)	(0.101)	(0.121)	(0.096)
Midwest	1.263	0.588	0.784	0.823
	(0.349)	(0.210)	(0.277)	(0.294)
South	1.489	0.990	2.052*	1.398
	(0.438)	(0.397)	(0.788)	(0.543)
West	1.124	1.069	0.934	1.096
	(0.392)	(0.384)	(0.386)	(0.524)
Pseudo R-squared	0.120			
N	5500			

Notes:

1. Estimates adjusted using SASS probability weights. Sample sizes rounded due to NCES nondisclosure rules.
2. Principal characteristics and school contextual factors are included in the model, but not reported in this table.
3. p<0.1, ** p<0.05, *** p<0.01

Table 4.9

Model 6 Principal Autonomy Influence on Principal Turnover (Partial)

	Mover	Leaver	Promoted	Retired
Variable	Relative Risk Ratio (RRR) and standard errors (SE)			
Set standards	1.220	1.207	0.955	0.868
	(0.156)	(0.205)	(0.156)	(0.142)
Establish curriculum	1.055	0.840	1.048	1.050
	(0.125)	(0.121)	(0.125)	(0.155)
Determine PD	0.913	0.888	1.030	0.840
	(0.107)	(0.149)	(0.147)	(0.137)
Evaluate teacher	1.338	0.636**	1.194	1.349
	(0.521)	(0.121)	(0.286)	(0.383)
Hire teacher	0.868	1.288	0.957	1.074
	(0.129)	(0.233)	(0.169)	(0.243)
Set discipline	1.022	1.039	0.860	0.840
	(0.159)	(0.194)	(0.168)	(0.168)
Decide budget	0.960	0.894	1.146	0.958
	(0.108)	(0.105)	(0.171)	(0.129)
Midwest	1.346	0.579	0.779	0.796
	(0.372)	(0.207)	(0.275)	(0.279)
South	1.630*	0.954	1.988*	1.334
	(0.475)	(0.384)	(0.782)	(0.500)
West	1.210	1.025	0.914	1.103
	(0.417)	(0.374)	(0.374)	(0.517)
Pseudo R-squared	0.125			
N	5500			

Notes:

1. Estimates adjusted using SASS probability weights. Sample sizes rounded due to NCES nondisclosure rules.
2. Principal characteristics, school context, and working conditions (except autonomy) are included in the model, but not reported in this table.
3. $p<0.1$, ** $p<0.05$, *** $p<0.01$

Table 4.10

Model 7 Salary Influence on Principal Turnover (Partial)

	Mover	Leaver	Promoted	Retired
Variable	Relative Risk Ratio (RRR) and standard errors (SE)			
Young (<40)	1.502	0.764	0.749	0.023***
	(0.412)	(0.267)	(0.298)	(0.016)
Mid-career (40-55)	1.797***	0.646	1.135	0.059***
	(0.376)	(0.175)	(0.333)	(0.016)
Male	1.041	1.504*	0.864	0.946
	(0.166)	(0.326)	(0.167)	(0.170)
White	1.098	0.592*	1.201	1.822*
	(0.268)	(0.167)	(0.389)	(0.632)
Teaching experience	0.987	0.992	0.959***	1.010
	(0.013)	(0.019)	(0.015)	(0.013)
Aspiring program	1.209	0.689*	0.770	0.951
	(0.181)	(0.140)	(0.143)	(0.177)
Secondary	1.472**	1.284	1.739**	1.089
	(0.273)	(0.271)	(0.383)	(0.210)
Combined	1.273	1.364	2.428**	0.701
	(0.336)	(0.376)	(1.034)	(0.267)
Town	0.676	1.468	1.172	0.511**
	(0.167)	(0.597)	(0.352)	(0.170)
Rural	0.647**	1.500	1.143	0.802
	(0.141)	(0.523)	(0.318)	(0.235)
Charter school	0.517	1.092	0.311	3.096**
	(0.208)	(0.528)	(0.230)	(1.395)
School enrollment	0.999***	0.999	1.000***	1.000
	(0.000)	(0.000)	(0.000)	(0.000)
District enrollment	1.000**	1.000	1.000	1.000
	(0.000)	(0.000)	(0.000)	(0.000)
AYP	0.723**	0.989	1.176	0.776
	(0.119)	(0.215)	(0.243)	(0.149)
Mid %min student	1.272	1.248	1.105	1.059
	(0.240)	(0.294)	(0.277)	(0.234)
High %min student	2.155***	1.188	0.762	0.972
	(0.634)	(0.387)	(0.272)	(0.343)
% NSLP	0.998	0.995	1.006	1.003
	(0.003)	(0.004)	(0.004)	(0.004)
Log(salary)	0.523*	0.328**	0.761	1.636
	(0.192)	(0.181)	(0.382)	(0.739)
Pseudo R-squared	0.094			
N	6230			

Estimates adjusted using SASS probability weights. Sample sizes rounded due to NCES nondisclosure rules. * p<0.1, ** p<0.05, *** p<0.01

Table 4.11

Model 8 Full Model

	Mover	Leaver	Promoted	Retired
Variable	Relative Risk Ratio (RRR) and standard errors (SE)			
Principal characteristics				
Young (<40)	1.165	0.820	0.491*	0.026***
	(0.351)	(0.322)	(0.200)	(0.020)
Mid-career (40-55)	1.451*	0.575*	0.990	0.061***
	(0.324)	(0.173)	(0.289)	(0.018)
Male	1.081	1.662**	0.982	0.971
	(0.170)	(0.389)	(0.206)	(0.185)
White	1.057	0.506**	1.101	2.408**
	(0.270)	(0.145)	(0.380)	(0.889)
Principal experience-this school	1.012	0.961	0.986	1.032**
	(0.018)	(0.025)	(0.022)	(0.016)
Teaching experience	0.984	0.988	0.941***	1.017
	(0.013)	(0.020)	(0.016)	(0.014)
Management experience	1.168	1.225	0.890	0.926
	(0.170)	(0.291)	(0.170)	(0.198)
Aspiring program	1.050	0.700	0.693*	1.090
	(0.165)	(0.159)	(0.138)	(0.219)
License/certificate	1.015	0.338*	0.885	0.770
	(0.475)	(0.195)	(0.637)	(0.510)
School context				
Secondary	0.976	1.359	1.439	1.144
	(0.202)	(0.351)	(0.386)	(0.278)
Combined	1.159	1.352	2.770**	0.907
	(0.362)	(0.447)	(1.202)	(0.363)
Suburb	0.995	1.201	1.038	1.160
	(0.225)	(0.441)	(0.307)	(0.374)
Town	0.751	1.424	1.496	0.532*
	(0.202)	(0.593)	(0.482)	(0.196)
Rural	0.734	1.272	1.098	0.783
	(0.177)	(0.425)	(0.327)	(0.258)
Charter school	0.571	0.666	0.230	3.728***
	(0.269)	(0.336)	(0.255)	(1.896)
School enrollment	0.999***	0.999	1.000	0.999**
	(0.000)	(0.000)	(0.000)	(0.000)
District enrollment	1.000***	1.000	1.000	1.000
	(0.000)	(0.000)	(0.000)	(0.000)
AYP	0.752*	1.012	1.272	0.792
	(0.126)	(0.239)	(0.282)	(0.168)

Table 4.11 (cont.)

	Mover	Leaver	Promoted	Retired
Mid %min student	1.287	1.062	0.929	1.103
	(0.258)	(0.247)	(0.243)	(0.272)
High %min student	2.050**	1.050	0.624	0.859
	(0.590)	(0.337)	(0.253)	(0.371)
% NSLP	0.996	0.994	1.004	1.000
	(0.003)	(0.005)	(0.005)	(0.004)
Student teacher ratio	0.994	1.029	1.035	1.009
	(0.025)	(0.034)	(0.023)	(0.029)
% minority teacher	1.002	1.003	0.993	1.001
	(0.005)	(0.006)	(0.006)	(0.007)
Instructional leadership practices				
Goal basic	0.792	1.136	0.713	1.346
	(0.165)	(0.291)	(0.192)	(0.377)
Goal excel	0.647*	1.063	1.122	1.043
	(0.146)	(0.310)	(0.298)	(0.312)
Hours interact students	1.001	0.996	1.005	0.996
	(0.005)	(0.007)	(0.006)	(0.007)
%Task-administration	0.993	1.008	0.996	0.996
	(0.005)	(0.006)	(0.007)	(0.006)
%Task-curriculum	1.010*	1.007	1.014**	0.993
	(0.006)	(0.009)	(0.007)	(0.007)
Programs-community	0.847	1.234	1.017	0.920
	(0.132)	(0.305)	(0.266)	(0.209)
Programs-achieve	0.308***	1.896	1.612	1.568
	(0.103)	(1.063)	(1.334)	(0.783)
Programs-award	1.171	1.340	1.143	0.685
	(0.226)	(0.370)	(0.283)	(0.158)
Programs-post	1.017	1.154	1.274	0.936
	(0.186)	(0.288)	(0.351)	(0.222)
Working conditions				
Contract type	1.115	0.500***	1.379	0.869
	(0.182)	(0.114)	(0.330)	(0.195)
Contract days	1.000	0.999	0.994*	0.997
	(0.002)	(0.003)	(0.003)	(0.003)
Log(salary)	0.741	0.426	0.791	3.070*
	(0.332)	(0.297)	(0.403)	(1.839)
Evaluation-score	1.019	0.604	1.078	1.012
	(0.258)	(0.240)	(0.377)	(0.353)
Tenure system	0.687*	0.939	0.676	0.547**
	(0.142)	(0.281)	(0.182)	(0.137)
PD	0.259**	0.500	-	0.379
	(0.153)	(0.399)	-	(0.464)
Suspension ratio	1.397**	0.443	1.209	1.262
	(0.224)	(0.255)	(0.306)	(0.306)

Table 4.11 (cont.)

	Mover	Leaver	Promoted	Retired
Safety	0.643***	1.042	0.766**	0.887
	(0.062)	(0.160)	(0.094)	(0.108)
Autonomy	1.051	0.830	1.006	0.912
	(0.117)	(0.095)	(0.113)	(0.098)
Midwest	1.295	0.574	0.765	0.845
	(0.351)	(0.204)	(0.275)	(0.301)
South	1.506	0.927	1.802	1.525
	(0.449)	(0.371)	(0.694)	(0.588)
West	1.096	1.028	0.907	1.080
	(0.369)	(0.382)	(0.374)	(0.515)
Pseudo R-squared	0.132			
N	5500			

Notes:

1. Estimates adjusted using SASS probability weights. Sample sizes rounded due to NCES nondisclosure rules.
2. * p<0.1, ** p<0.05, *** p<0.01

CHAPTER 5

DISCUSSION

In Chapter 5, first I interpret and discuss the findings in the four dimensions: principal characteristics, school context, principal instructional leadership practices, and working conditions. Then I summarize main findings of this study, and elaborate on the contributions, limitations, and projections of future research. Finally, I explore some policy implications based on the findings of this study.

5.1 Principal Characteristics

As the supply side of the principal labor market, principals' demographic characteristics are the innate nature of principals, meanwhile, principals' professional characteristics such as education level and certification indicate principals' ability and experience in the principalship. These individual level characteristics, although varied upon each person, can reflect principals' features, needs, and ability to a certain extent.

For principal demographics, the only significant variable that predicts principal turnover is age. The middle-aged principals (between 40 and 55) were almost twice as likely to move to another school compared with those who were older than 55. It could be speculated that middle-aged principals are more likely to pursue a principal position in a school that is more desirable or be transferred by school districts more often; but

principals who are older than 55 may be more likely to settle down at one school until retirement. However, Fuller and Young (2009) found that principals between the ages of 35 and 49 were less likely to move or leave a school than principals of other ages. The differences between these studies should also be acknowledged. This dissertation applies multinomial logistic regressions that controlled for various principal characteristics with a cross-sectional dataset, while Fuller and Young (2009) utilized a descriptive analysis on a longitudinal dataset.

In terms of education level, having a master's degree or higher did not show a significant influence on the odds of different types of principal turnover. Given that 98.4% of public school principals have a master's degree, which is an entry educational level of the principalship required by most states, it is not surprising that there is little variation of this variable that could contribute to a significant influence on principal turnover. Similarly, Gates et al. (2006) found having a master's degree or higher had no significant effect on the probability of principals leaving the school system or transferring schools, but these principals were less likely to change positions within the state system. Additionally, principals' years of administrative experience at their current schools and having management experience outside of education had no significant influence on the probability of different types of principal turnover. However, Gates et al. (2006) and Baker et al. (2010) both found that more experienced principals were less likely to change schools or positions. Due to the different datasets and variables applied, it is impossible to discover the reasons behind these findings.

Furthermore, principals that attended aspiring principal programs or had a license/certificate in school administration were less likely to change roles in schools or

leave the education system. It could be speculated that participation in aspiring principal programs enhances principals' leadership expertise and performance as well as job loyalty, which might result in a slightly lower likelihood of transitioning out of the principalship. Moreover, pursuing a license or certificate in school administration indicates that these principals could have stronger interest and determination to pursue the principalship than other principals.

5.2 School Context

In terms of school level and school type, consistent with Gates et al. (2006), principals in secondary schools were more likely to move, leave, and get promoted to the district central office than those in elementary schools. Additionally, principals in charter schools were twice as likely to retire than those in traditional public schools (TPS). Similarly, Ni et al. (2014) found that principals in charter schools were much more likely to leave the education system (including retirement) compared with TPS with a longitudinal dataset in Utah from 2004-2011. But since they included the retired principals in the leaver group, it is difficult to ascertain whether the higher probability of principals leaving the school system was due to the principals who retired.

School enrollment and district size also influence the probability of principal turnover. Principals who were in schools with a larger school enrollment were less likely to move to another school and change roles in school or leave the education system, which were also consistent with Gates et al. (2006). Since schools with a larger student enrolment tend to have more funding and resources that could facilitate school leadership and management, principals may be more likely to stay in these schools. Additionally,

principals in larger schools were more likely to get promoted to the district central office. Larger schools could be associated with more advancement opportunities to the district central office. In terms of district size, principals in larger school districts were more likely to move to another school. Larger school districts could have more demands to transfer principals for strategic and management purposes, which could result in higher odds of principal rotation within the district. Further empirical studies remain to be conducted to unravel principal transition patterns such as within-district or between-district transfer with a longitudinal dataset in order to track the schools that principals move into.

In terms of student demographics and performances, principals in schools that did not make Adequate Yearly Progress (AYP) were more likely to move to another school. Additionally, principals in schools with the highest quartile of students of color were twice as likely to transfer to another school than the lowest quartile, the relative risk ratio of which (200%) was a bit larger than that of Loeb et al. (2010)'s finding (160%) with a longitudinal dataset from Miami-Dade County public schools. These findings confirmed the common conclusion in a number of studies (Akiba & Reichardt, 2004; Baker et al., 2010; DeAngelis & White, 2011; Gates et al., 2006; Loeb et al., 2010) that schools with a large concentration of students of color and lower-performing students often have higher principal turnover. However, different from these findings, the proportion of students that were approved for the National School Lunch Program (NSLP) did not show a significant influence on the likelihood of different types of principal turnover. Since Title 1 schools have been obtaining increasing funding during recent years[7] to develop, support, reward,

[7] http://www2.ed.gov/policy/elsec/leg/esea02/pg1.html

and advance principals and teachers,[8] principals' working conditions could be improved to some degree, which might be associated with decreasing principal turnover in these low-income schools. But again, this hypothesis remains further empirical research to testify.

5.3 Principal Instructional Leadership Practices

Instructional leadership can exert a strong influence on raising student achievement, through setting school mission, managing instructional programs, and promoting school culture (Blair, 2002; Hallinger, 2005; Hallinger et al., 2013). Although the variables of instructional leadership in this study did not perfectly measure these above three dimensions, they can represent principals' instructional leadership practices to some extent. Moreover, this study provides a perspective for researchers and practitioners to understand how some principals' instructional leadership practices are associated with different types of principal turnover.

In this study, among the factors of principal instructional leadership practices, setting the most important school goals as enhancing student academic excellence, having academic incentive programs in school, and spending a higher proportion of time on curriculum/teaching-related tasks and internal administrative tasks showed a significant influence on the probability of principal turnover. Specifically, principals who were highly focused on school goals of enhancing student academic excellence and had academic incentive programs in school were significantly less likely to move to another school. The reasons could be that these principals were more devoted to student success

[8] http://www2.ed.gov/programs/teacherqual/index.html

and student academic excellence, thus less likely to move to another school to start over with their reform efforts. To take this a step further, the inclination of these leaders staying at their current schools could be beneficial for school management and success. The leaders who are highly focused on enhancing student performance could have a stronger influence on student performance than other leaders (Hallinger, 2005; Hallinger et al., 2013), therefore, the lower likelihood of turnover of these leaders could sustain student achievement effort and facilitate school success in the long term.

In terms of principals' time use, principals who spent a higher proportion of time on curriculum and teaching-related tasks were more likely to move to another school. The possible interpretations could be that these principals who spent more time on curriculum and teaching-related were more focused on instruction and could enhance student performance, thus, they have better chances of moving to more desirable schools; or these principals are frustrated with these tasks and they want to switch schools to avoid these tasks; or the superintendent in the districts may tend to transfer these principals for school success. Moreover, principals who spent a higher percentage of time on curriculum and teaching-related tasks were also slightly more likely to get a promotion to the district central office. It could be speculated that these principals might perform better than their peers in general so that they could obtain a job advancement opportunity to the district. The promotion of a strong instructional leader to the district central office could be intended to exert greater influence on student performance in the district level, since they could benefit the public education system on a larger scale.

In addition, principals who spent a higher percentage of time on internal administrative tasks were slightly more likely to change roles in school or leave the

education system. Internal administrative tasks are important management functions in principal leadership and school functionality. A heavy workload on the school administrative tasks can be a discouraging factor that drives principals out of the principalship (Pounder & Merrill, 2001).

5.4 Principal Working Conditions

As the demand side of the principal labor market, school districts provide working environments for principals. For instance, policy makers in school districts can enhance principal working conditions, including determining principal working hours and compensations, supporting safer school environments, delivering professional development opportunities, delegating adequate school-level decision making power to principals, and evaluating principal performance, as well as creating and implementing principal retention and rotation policies to transfer or dismiss principals when necessary (Kowalski, 2013; Ornstein et al., 2016). Since principal working conditions are more amenable to change by policy creation and implementation compared with other factors such as school context, policy makers can create policies to ameliorate principal working conditions and support principal leadership in order to retain quality principals (Fuller et al., 2015). Principal working conditions, including salary and other job benefits, professional development opportunities, school safety and student disciplinary problems, workload, and autonomy can influence the probability of principal turnover.

5.4.1 Job Benefits

Job benefits, including salary, contract, and tenure system, influence the probability of principal turnover. The increase of principals' salary lowered the probability of principals moving to another school or changing roles in school/leaving the education system, while holding principal characteristics and school context constant. This finding is consistent with previous literature (Akiba & Reichardt, 2004; Baker et al., 2010; Papa et al., 2002; Papa Jr., 2007; Pijanowski & Brandy, 2009). However, after other working conditions variables were added, salary became insignificant. It means that to principals, salary is not the only concern in their job choice and career transitions, but other nonpecuniary factors of working conditions are also important concerns for principals (Farley-Ripple et al., 2012a; Loeb et al, 2010; Pijanowski et al., 2009).

Additionally, principals who were represented under a meet-and-confer agreement or a collective bargaining agreement were less likely to change roles in school or leave the education system. Both contract types can protect principals' job benefits to some degree than without these contracts. Meanwhile, principals who worked in a district with a principal tenure system were slightly less likely move to another school.

5.4.2 Professional Development

Professional development is an important pathway for principals to develop leadership capacity and promote school effectiveness (Farley-Ripple et al., 2012a; Hopkins, 2003). Professional development and training opportunities, as nonpecuniary working conditions, were also regarded by many principals as important concerns in career choices (Pounder & Merrill, 2001; Young, Rinehart, & Place, 1989). Therefore, it

is reasonable that principals who participated in professional development activities were less likely to move to another school.

For the finding—participating in professional development was associated with higher odds of principals getting promoted to the district central office, there could be many possible interpretations. For instance, principals' personal ambition of job advancement could drive them to attend professional development programs; or districts with more principal professional development opportunities tend to provide more job advancement opportunities for principals; or with these professional training that enhanced their leadership expertise and capability, principals could have higher chances of climbing up their career ladder into a higher level of administration in the school district (Grissom & Harrington, 2010). Although getting a promotion to the district central office is a type of principal turnover, it is also a job advancement opportunity for principals. It could be beneficial for the school district, because effective principals with leadership expertise and experiences getting promoted to an administrative position in the district level could facilitate school development and student success on a larger scale.

5.4.3 Student Disciplinary Problems

Principals in schools with a larger student suspension ratio or a higher frequency of school problems were significantly more likely to move to another school. These findings reflect principals' preferences for safer and easy-to-handle school conditions as well as less pressure from student disciplinary issues (Loeb et al., 2010). Principals in schools with a higher frequency of student disciplinary problems were significantly more likely to get a promotion to the district central office.

5.4.4 Workload

On average, principals spent about 59 hr per week on all school-related activities before, during, and after school (about 12 hr per day). This finding is consistent with a national report conducted by the Institute for Educational Leadership (IEL), which states that on average a principal works over 10 hr a day (Usdan, McCloud, & Podmostko, 2000). Nowadays principal assume increasing responsibilities and pressures, ranging from enhancing student learning, managing school personnel, allocating school resources, cultivating school culture, to rallying various stakeholders to achieve school goals (Hallinger et al., 2013; James & Whiting, 1998; Leithwood et al., 2004; Robinson et al., 2008). To achieve these tasks, principals often have an overwhelming workload, work long hours, and face increasing pressure at work, and many principals even consider "the job is simply not doable" (Hull, 2012; Usdan, McCloud & Podmostko, 2000). Long working hours and time away from family were often regarded as personal and domestic concerns and disincentives for principals to stay at the principalship (MacBeath, 2006).

Although the hours that principals spent on all school-related activities did not show a significant difference either across different principal groups or on the influence of principal turnover (thus they were removed from the regression tables), principals who spent a higher percentage of time on internal administrative and curriculum/teaching-related tasks were associated with lower odds of principal retention. Since these are often the main tasks principals undertake, it could be speculated that the workload on various school matters can influence principal turnover to a large degree.

Moreover, since the sample of this study only includes public school principals in 2011-12, either stayed or transitioned their jobs in the following year, it does not account

for those who did not choose to become a principal in the first place. In fact, a heavy workload on various school matters and high demands of working long hours could be negative factors that discourage teachers from pursuing a principalship career path at the front end, which could undermine the supply of principals and deteriorate the principal shortage problem (Hull, 2012; Pounder et al., 2001). Further qualitative and quantitative research remains to be conducted on factors that influence teachers' decisions on pursuing the principalship career and intentions/reasons of principal turnover.

5.4.5 Autonomy

Oftentimes, states, local school boards, and school districts exert certain power on some domains that affect principals' decision making influence, such as curriculum, setting student performance standards, or budget spending (Farley-Ripple et al., 2012a; Louis et al., 2010; Marsh et al., 2008). On the one hand, these higher-level of policy influences could provide administrative support and facilitate school management; but on the other hand, their over-control in school matters could cause principals a lack of decision making power over major school-level matters and discourage them to make actual improvement efforts (Adamowski et al., 2007; Papa & Baxter, 2008).

By controlling all the principal characteristics and school context, this study found that principals who had more influence over evaluating teachers were less likely to change roles in school or leave the education system. It could be speculated that principals' decision making power on teacher evaluation, compared with the influences on other domains, could influence their probability of leaving the principalship. Since principal turnover intentions is as a proxy to understand the antecedents of the actual act,

this finding is consistent with Tekleselassie and Villarreal III (2011) in that principal autonomy over school-level supervision, including teacher evaluation, can significantly influence principals' departure and mobility intentions.

5.5 Conclusions

This study explores what factors influence different types of principal turnover. By applying the supply and demand framework to the principal labor market, I identified factors from the supply side (principal), demand side (school and school district), and policy environments (district, state, and federal level). With the guidance of this conceptual framework, I conducted a literature review on factors that affect principal turnover, including principal characteristics and principal instructional leadership practices (supply side) and school context and working conditions (demand side). Based on the national data SASS in 2011-12 and PFS in 2012-13, I performed the Kruskal-Wallis tests and Chi-square tests to compare the means of each variable across principal groups to detect the differences of the variables across different types of turnover groups. Then with multinomial logistic regressions with region fixed effects, I examined to what extent the four dimensions of factors can predict the probability of different types of principal turnover.

The main findings of this study are summarized in the four dimensions as follows:

1. Principal characteristics
    - Middle-aged principals (between 40 and 55) were more likely to move to another school compared with those who were older than 55.
    - Male principals were more likely to change roles in school or leave the

education system to pursue another career than female.

- More years of teaching experience were associated with lower odds of principals getting a promotion to the district central office.
- Principals who attended aspiring principal programs or had a license or certificate in school administration were less likely to change roles or leave the school system.

2. School context
    - Principals in secondary schools were more likely to make all types of transitions than those in elementary schools except for retirement.
    - Principals in schools that were located in rural areas were less likely to move to another school than those in the city.
    - Principals in charter schools were more likely to retire compared with those in traditional public schools (TPS).
    - Principals who were in schools with a larger school enrollment were less likely to move to another school and change roles in school or leave the education system, and were more likely to get promoted to the district central office.
    - Principals in larger school districts were more likely to move to another school.
    - Principals in schools that did not make Adequate Yearly Progress (AYP) were more likely to move to another school.
    - Principals in schools with the highest quartile of students of color were 100% more likely to move to another school than the lowest quartile.

3. Principal instructional leadership practices
    - Principals who were highly focused on enhancing student academic performance and academic incentive programs were less likely to move to another school.
    - Principals who spent a higher proportion of time on curriculum and teaching-related tasks were more likely to move to another school, and more likely to move to the district central office.
    - Principals who spent a higher percentage of time on internal administrative tasks were more likely to change roles in school or leave the education system.
4. Principal working conditions
    - An increase of principals' salary lowered the odds of principals' moving to another school and changing roles in school or leaving the education system.
    - Principals who were represented under a meet-and-confer agreement or a collective bargaining agreement were less likely to change roles in school or leave the education system.
    - Principals who worked in a district with a principal tenure system were slightly less likely move to another school.
    - Principals who participated in professional development activities were less likely to move to another school and more likely to get a promotion to the district central office.
    - Principals in schools with a larger student suspension ratio or a higher

frequency of school problems were significantly more likely to move to another school.

- Principals who had more influence over evaluating teachers were less likely to change roles in school or leave the education system.

5.6 Limitations

Despite the comprehensive findings of this dissertation, there are several limitations in this study. First, similar to most empirical studies on factors that influence principal turnover, it is difficult to distinguish voluntary and involuntary turnover (Farley-Ripple et al., 2012b). Principals who initiate their own career transitions and those who are forced to transfer by the district central office are impossible to identify with this dataset. However, it is still possible to observe the patterns of principal turnover and factors that are associated with different types of principal turnover.

Second, with the nonexperimental design of this study, the results only imply causation but unable to determine the actual causational relationship between all these factors and principal turnover. Even so, this study can still contribute to the understanding of their relationships and inform policy making to some extent. Additionally, due to the cross-sectional data structure of this study, I was only able to examine principal turnover statuses between two adjacent years but am unable to follow a principal cohort in a longitudinal dataset to examine a long-term dynamic pattern of principal transitions.

Finally, in this study I divided principal turnover into four categories, but due to the complexity of principal transitions, it is still impossible to cover all the types of

principal transition, such as leaving due to unknown reasons. Meanwhile, given the limitation of the sample size, I combined principals who left the school system and those changed roles in school into one category as “leaver”. With more affluent datasets, these two types of principal turnover could be divided in order to better examine the characteristics of each type.

5.7 Contributions of This Study

The study contributes to the current research base in the following ways. First, this study comprehensively examines a range of factors, including principal characteristics, school context, principal instructional leadership practices, and working conditions, which could provide researchers with a broader picture and deeper understanding regarding various factors that influence different types of principal turnover.

Second, this study addresses a research gap by examining how principal instructional leadership practices are associated with different types of principal turnover. Given the strong influence that instructional leadership has in raising student achievement (Blair, 2002; Hallinger, 2005; Hallinger et al., 2013), this study provides a perspective for researchers and practitioners to understand how different principal instructional leadership practices, including setting school mission, managing instructional programs, and promoting school culture, are associated with principal turnover. Further, it could help policy makers support and retain strong instructional leaders for the optimization of educational resources and school success.

Third, with a focus on the influence of principal working conditions on principal

turnover, this study assists policy makers in understanding how principal salary, contract type, workload, autonomy, and professional development opportunities influence different types of principal turnover. This understanding can assist policy makers in providing necessary resources and creating positive environments in order to develop, support, and retain quality principals for school success (Farley-Ripple et al., 2012b).

Fourth, of the few studies that have examined principal turnover, most have combined multiple types of principal career transitions, including transferring to another school, transitioning to the district central office, changing to other roles in a school, and leaving the school system (Baker et al., 2010; Farley-Ripple et al., 2012a). This study identifies different types of principal turnover, which provided a more comprehensive and nuanced understanding regarding factors that influence multiple types of principal career transitions.

Finally, this study is one of the first studies that explores principal turnover issues with a nationally representative sample (SASS) of public school principals. Therefore, the findings have high generalizability to all public schools across the United States. Additionally, compared with state or local level administrative data, SASS and PFS surveyed a rich set of items and variables, including principal leadership practices and working conditions, thus providing more valuable information for policy design and implication. Moreover, with quantitative research methods, this study provides scholars with an empirical perspective on principal turnover issues, and assists policy makers in creating appropriate principal retention policies to enhance the stability of school leadership.

5.8 Future Research Implications

Given the lack of research in this area, more empirical research remains to be conducted to unravel the patterns of principal career transitions and factors that influence different types of principal turnover. For instance, longitudinal studies that follow a principal cohort could be examined to study the dynamic transition of principals over time. Additionally, qualitative research methodology such as case study or focus groups could be applied in order to obtain an in-depth understanding regarding voluntary versus involuntary reasons behind different principal transitions and various organizational factors that influence principal retention. Finally, researchers could conduct more inter-disciplinary research on principal career transitions that apply theories of labor economics, psychology, and leadership in order to reveal the economic and psychological reasons that drive principals' career transitions, and mitigate the negative influence of principal turnover on school system.

5.9 Policy Implications

With state and federal accountability policies placing increasing pressures on principals to improve student performance, principals assume expanding roles, challenges, and a growing workload from multiple stakeholders (Loeb et al, 2010; Pijanowski et al., 2009). Given the relatively high principal turnover in recent years, school districts, as the demand side and policy makers of the principal labor market, have the responsibility to create positive working conditions and provide adequate support in order to mitigate principal attrition and turnover in order to enhance school stability and student success.

At the local level, district policy makers can create proper retention and rotation policies to encourage high-quality principals to remain in the principalship in order to make continuous progress in enhancing student achievement and cultivating positive school culture (Ornstein et al., 2016). Especially in turbulent times, rapid principal rotation policies, if not well designed, can be highly disruptive to long-term school development, positive school culture, as well as continuous and trusting working relationships between principals and teachers (Abelson & Baysinger, 1984; Beteille et al., 2012; Copland, 2003; Fink & Brayman, 2006; Gates et al., 2006; Hargreaves & Fink, 2000; Louis et al., 2010; MacMillan, 2000). Principals also may feel frustrated if they are rotated too frequently, thus resulting in principal job dissatisfaction and attrition (Hargreaves & Fink, 2000). Therefore, policy makers could participate in intentional and purposeful principal retention and rotation policies in order to motivate effective principals to remain for a proper period of time to sustain reform efforts.

Based on the above research findings and discussions, this study has the following policy implications. In terms of principals' professional experience, district policy makers could develop high-quality aspiring principal training and licensure programs to enhance leadership capacity and sustainability. During principal hiring process, policy makers could pay more attention to principals who have attended aspiring programs or have an administrative license/certificate, since they indicate higher probability of retention. Although statistically significant, these characteristics are not the only indicators of principal retention, thus they cannot be applied as sole criteria in hiring practices.

In terms of school contextual factors, principal turnover issues are especially salient in schools with a large concentration of low-performing students and students of

color as well as schools with a smaller student enrollment, since these disadvantaged school conditions are often associated with unsafe environments, less funding and support from community stakeholders, as well as higher pressure to achieve state academic standards (Loeb et al., 2010). Since these conditions are more difficult for principals to manage and lead than other school conditions, more policy level initiatives and incentives could be applied to attract and encourage effective principals to retain in these schools. For instance, policy makers could improve principals' economic benefits of working in these schools and provide more beneficial working conditions and adequate support to school leaders.

Compared with school context, principal working conditions are more amenable to manipulation and influencing through policy design and implementation. Drawing on the findings on working conditions, district policy makers could provide positive working conditions to attract individuals to enter the principalship and retain for a long-term school improvement, including offering principals beneficial job benefits and adequate professional support that increases principals' economic and psychosocial benefits of entering the principalship and retaining at their positions. These factors include higher salary, job contracts (meet-and-confer agreement or a collective bargaining agreement), principal tenure system, principal professional development opportunities, and adequate autonomy on school matters such as teacher evaluation. Moreover, policy makers could create positive school conditions, such as safer school environments, less workload, more support on principals' instructional and internal administrative tasks in order to improve principals' job satisfaction and intention to stay.

This study also fills a research gap by examining how principal instructional

leadership practices are associated with different types of principal turnover. Although multiple reasons can cause principals to move or leave, either voluntarily or involuntarily, the turnover of principals who are more devoted to student learning and teaching programs can be a negative influence on school management and success, since the turnover of these strong instructional leaders are more likely to interrupt the continuity of the academic program implementation and reform efforts.

To mitigate this situation and retain leaders who are highly focused on curriculum and teaching-related tasks, policy makers could create more positions in school, such as curriculum aids or teaching coaches, to share and support some of the instructional leadership responsibilities and workload with principals. Additionally, to reduce principal attrition and turnover, it is necessary for district policy makers to reduce some internal administrative workload and bureaucratic paper work for principals, create certain teacher leadership positions to assist principals with administrative tasks, and develop professional development opportunities to facilitate the management of administrative tasks. Finally, the principal rotation policies at the school district level could be strategically contemplated so that strong instructional leaders may not be frequently transferred in order to maintain a long-term and continuous school reform effort in school.

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